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**Mission and Installation Contracting Command Services  
Acquisition: Empirical Analysis of Army Service Contract  
Management Practices**

**14 April 2011**

**by**

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## **ABSTRACT**

The purpose of this research is to conduct an in-depth analysis of services acquisition management practices in the Army. The objective of the research project is to build on the understanding developed in prior research projects and generate a data collection instrument that will identify the factors that promote or obstruct the use of best practices in acquisition management. The study will help build upon identifying factors that influence the efficiency and effectiveness of service contracts. In this study, data was collected from two Army contracting offices. This study serves as a pilot for future research to be conducted at the remaining Mission and Installation Contracting Command offices. The findings of the research show that service type affects contract characteristics and management practices. The study also demonstrates that there is a relationship between capacity and management practices. These findings show that the performance of service contracts can be improved through enhanced contract management process capabilities.



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Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the Federal Government.



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## LIST OF ACRONYMS AND ABBREVIATIONS

|           |  |
|-----------|--|
| ACC       | Army Contracting Command                                       |
| ACOM      | Army Commands  |
| AMC       | Army Material Command  |
| ARFORGEN  | Army Force Generation  |
| ARP       | Acquisition Research Program                                   |
| ASA       | Assistant Secretary of the Army                                |
| ASA(M&RA) | Assistant Secretary of the Army (Manpower and Reserve Affairs) |
| AT&L      | Acquisition Technology and Logistics                           |
| CONUS     | Continental United States                                      |
| COR       | Contracting Officer's Representative                           |
| DA        | Department of the Army   |
| DAPA      | Defense Acquisition Performance Assessment                     |
| DAWIA     | Defense Acquisition Workforce Improvement Act                  |
| DFARS     | Defense Federal Acquisition Regulation Supplement              |
| DOC       | Directorate of Contracting                                     |
| DoD       | Department of Defense  |
| DoDIG     | Department of Defense Inspector General                        |
| DRU       | Direct Reporting Units   |
| ECC       | Expeditionary Contracting Command                              |
| FAR       | Federal Acquisition Regulation                                 |
| FFP       | Firm-Fixed Price   |
| FTE       | Full-time Equivalent   |
| FY        | Fiscal Year  |
| GAO       | Government Accountability Office                               |
| GSA       | General Services Administration                                |
| IGE       | Independent Government Estimate                                |
| JCIDS     | Joint Capabilities Integration and Development System          |
| KO        | Contracting Officer  |



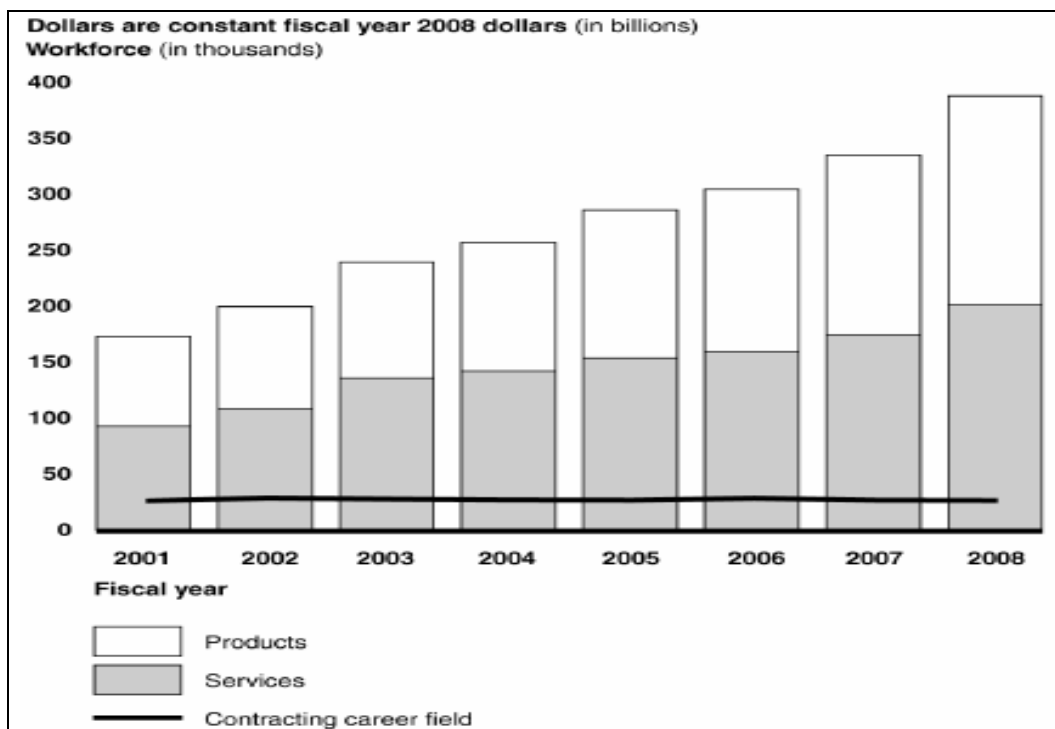
|           |   |
|-----------|---|
| LPTA      | Lowest Priced Technically Acceptable                                |
| MICC      | Mission and Installation Contracting Command                        |
| M&RA      | Manpower and Reserve Affairs  |
| NIB       | National Industries for the Blind                                   |
| NISH      | National Industries for the Severely Handicapped                    |
| NPS       | Naval Postgraduate School   |
| OCONUS    | Outside the Continental United States                               |
| OEF       | Operation Enduring Freedom  |
| OIF       | Operation Iraqi Freedom   |
| PALT      | Procurement Acquisition Lead Time                                   |
| PBSA      | Performance-Based Services Acquisition                              |
| PCO       | Procurement Contracting Officer                                     |
| PM        | Project Manager   |
| PMR       | Public Management Reform  |
| POTUS     | President of the United States                                      |
| PPBE      | Planning, Programming, Budgeting, and Execution                     |
| PSC       | Product and Service Code  |
| PWS       | Performance Work Statement  |
| QASP      | Quality Assurance Surveillance Plan                                 |
| RFP       | Request for Proposal  |
| SECDEF    | Secretary of Defense  |
| SOW       | Statement of Work   |
| USARNORTH | United States Army, North   |
| USD       | Under Secretary of Defense  |
| USD(AT&L) | Under Secretary of Defense (Acquisition, Technology, and Logistics) |



## I. INTRODUCTION

### A. BACKGROUND

Supplies and services acquisition in the Department of Defense (DoD) continue to increase in scope and dollars. A Government Accountability Office (GAO, 2009c) report showed that DoD obligations in service contracts doubled between fiscal years (FY) 2001 and 2008, from \$92 to \$200 billion, as shown in Figure 1. This increase leads to a need to improve the performance of services acquisition in DoD business practices. Business management reform comes about because of stewardship and accountability (Brook & Candreva, 2007). However, a more current and pressing concern for reform is the rising national debt of \$14 trillion.



**Figure 1.** DoD Contract Obligations and Contracting Workforce

(GAO, 2009c)

Fiscal responsibility has been a hot topic for the top leadership in the executive branch. Financial security has an impact on national security (Peter G. Peterson Foundation, 2010). The 2010 *National Security Strategy*, issued by the Office of the



President of the United States (POTUS), identified a strong U.S. economy as part of the foundation for national security and as a fiscally sustainable path. One action specific to this strategy is the reform of acquisition and contracting processes in the federal government, in which DoD acquisition and contracting accounts for 70% of all federal procurement spending (Office of the POTUS, 2010).

Secretary of Defense (SECDEF) Robert Gates has also addressed the need for fiscal responsibility in the 2010 *Quadrennial Defense Review (QDR)* (DoD, 2010) report and in several public announcements (Gates, 2010a, 2010b, 2010c). Like the POTUS, the SECDEF has pushed for “reforming how we buy” (DoD, 2010, p. 19) and improving the “conventional acquisition process that is currently too long and too cumbersome” (p. 19). The SECDEF has called for a 2–3% growth in the DoD budget, but a large part of this will come from savings in overhead costs in his tail-to-tooth initiative, finding savings in supporting functions of the DoD and transferring those dollars to the warfighters (Gates, 2010b). Acquisition of services falls into the tail category of this initiative. There must be a “demand for cost, schedule, and performance realism in the DoD acquisition process” (DoD, 2010, p. 99). This can only come about with an adequate and trained workforce. As a result, Under Secretary of Defense for Acquisition, Technology, and Logistics (USD[AT&L]) Ashton B. Carter has responded to the need for acquisition reform.

## **B. USD(AT&L) RESPONDS**

On June 28, 2010, USD(AT&L) Carter submitted a memorandum to DoD acquisition professionals. The memorandum’s topic was a mandate for restoring affordability and productivity in defense spending. Mr. Carter’s guidance was to scrutinize the terms of every contract issued in order to ensure that they do not contain inefficiencies or unneeded overhead. Due to the current economic environment, the DoD will have to “do more without more” (USD[AT&L], 2010, p. 4). Therefore, it is critical to deliver better value to the taxpayer and to improve the way the DoD does business (USD[AT&L], 2010).



The DoD is relying increasingly on the private sector to provide a wide range of services, including consulting and administrative support, information technology services, and weapons systems and base operations support. The DoD is the largest buyer of services in the federal government. It operates in an environment in which the nation's large and growing structural deficit requires difficult resource decisions. Therefore, the DoD must maximize its return on investment and provide the warfighter with needed capabilities at the best value for the taxpayer (GAO, 2006b). In an effort to deliver better value, it is important to know what services are being procured and what the costs are for those services in terms of percentage spent every year. For example, services acquisition in the U.S. Army has continued to increase in scope and dollars over the last 10 years, with \$34 billion spent in FY2008 across 25 different categories of services (GAO, 2010b).

The Army has spent more on services than on supplies, equipment, and goods combined (Apte, Apte, & Rendon, 2010b). The GAO cited three major reasons for this increase. First, the DoD has increasingly relied on contractor-provided mission-critical services, to include everything from operating information technology systems to logistical support on the battlefield. In a 2007 GAO report analyzing defense service contracts, the GAO reported that the "DoD's obligations on service contracts, expressed in constant fiscal year 2006 dollars, rose from \$85.1 billion in fiscal year 1996 to more than \$151 billion in fiscal year 2006, a 78 percent increase" (p. 3). More than \$32 billion, or 21%, of the DoD's obligations for services in fiscal year 2006 were for professional, administrative, and management support contracts (GAO, 2007). Overall, the amount obligated on service contracts exceeded the amount the department spent on supplies and equipment, including major weapons systems. As evidence of this, after the 2001 terrorist attacks, first of all increased security requirements and deployment of active duty and reserve personnel resulted in the DoD having fewer military personnel to protect domestic installations. Second, growth in service contracts increased in response to the way the DoD acquires certain capabilities (GAO, 2007). For example, the Air Force secures its launch services from contractor-owned launch vehicles rather than uses resources organic to the government. Third, in Iraq the DoD has relied extensively on



contractors to undertake major reconstruction projects and to provide support to the troops (GAO, 2007). Such services typically include interpreters, intelligence analysts, and base operations support. Although obligations continue to increase, the size of the acquisition workforce has decreased (GAO, 2007).

In this section on the DoD's response to improving service contracts acquisition, we illustrated how leaders from the POTUS to the USD(AT&L) are pushing for acquisition reform. The next step would be for the individual military Services to take action. However, because DoD services acquisition is so broad and complex, the problem must be addressed incrementally. This leads to the topic of our research report, analyzing the management of service contracts in the Army.

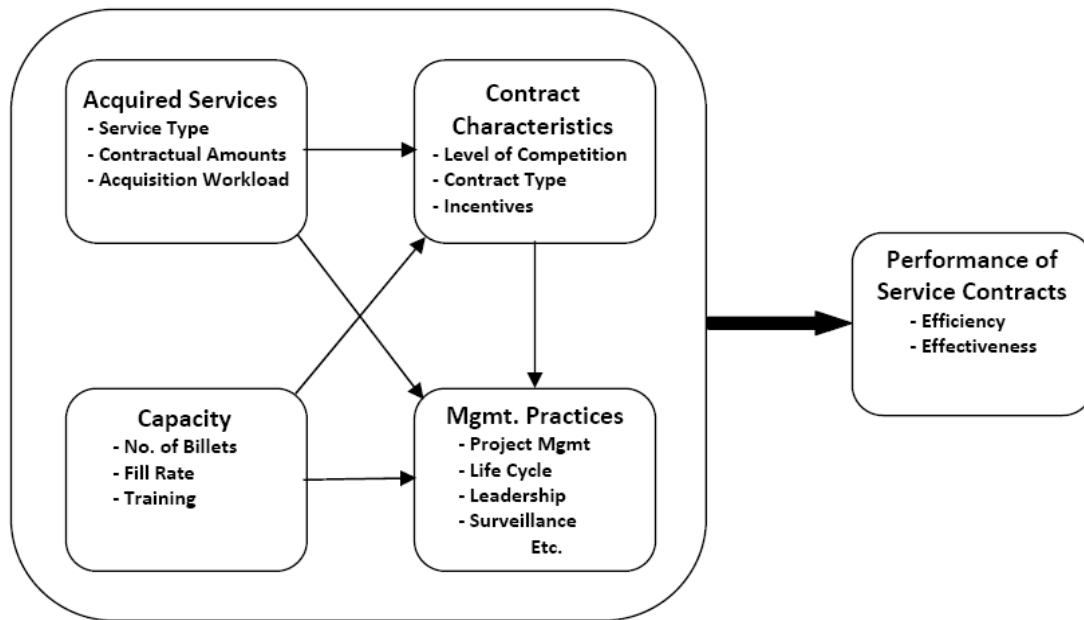
### **C. PURPOSE OF RESEARCH**

Our purpose in this research is to develop a comprehensive understanding of how the U.S. Army Mission and Installation Contracting Command (MICC) manages the acquisition of services. In this research, we build on the understanding developed in prior research projects by undertaking a focused, in-depth study of services acquisition in the Army so as to understand the drivers of acquisition management practices. An understanding of these drivers helps us achieve the larger goal of improving the performance of service contracts, as illustrated in Figure 2. We pursue four main objectives in this research:

- 1) Build on the understanding developed in prior research projects and develop a data collection instrument that will identify the factors that promote or obstruct the use of best practices in acquisition management.
- 2) Provide recommendations for how to save in the tail end of military operations in order to help improve the efficiency and effectiveness of service contracts.
- 3) Assess how the data collection form can be improved to apply this study across all Army MICC centers and Directorates of Contracting (DOCs) in future research.



- 4) Create teaching materials for Naval Postgraduate School (NPS) instructors to use in acquisition and contracting courses.



**Figure 2.** Conceptual Model: Drivers of Acquisition Practices and Performance

(Apte, Apte, et al., 2010b)

#### **D. RESEARCH QUESTIONS**

In this research, we attempt to answer the following three major questions as they relate to services acquisition within the U.S. Army MICC:

- 1) Do the contract characteristics differ for different types of services?  
Complex requirements are often more difficult to define than simple requirements. The complexity of the requirements determines the contracting vehicles and types of contracts to be used in acquiring services as well as how they are managed after they have been awarded to a service provider.
- 2) Do the types of services being acquired affect the management practices being used? Because services are so complex and broad, there is no





standardized solution for managing service contracts. In this research, we explore how contracting staff manage different service requirements.

- 3) Does the capacity for carrying out acquisition-related work affect the management practices being used? Having adequate capacity for carrying out acquisition-related work can be considered one of the preconditions for use of best practices in acquisition management.

## **E. BENEFITS OF RESEARCH**

The data we collected in this research will help in understanding and analyzing the management practices utilized in the U.S. Army MICC. There are two benefits to this study. First, this study is a continuation of previous studies in services acquisition, but it focuses more specifically on Army units. This study also establishes a framework for future studies by developing a data collection and analysis tool to be applied across other contracting offices. Second, in this research we identify areas to improve management practices in services acquisition. The overall intent of this research is to increase the efficiency and effectiveness of meeting service requirements through contracting.

## **F. LIMITATIONS OF RESEARCH**

This research is limited by the broad nature of services acquisition. The sample size used in the data collection for this research is only a small percentage of services being acquired by U.S. Army MICC in terms of categories of services, number of contracting offices, and number of contracts. For example, there are over 20 Product and Service Codes (PSC) used to categorize services. In this study, we only looked at four: two for complex requirements and two for simple requirements. Also, there are 41 contracting offices that report under the U.S. Army MICC but we used only two to collect data in this study. Finally, of the four PSCs and two contracting offices we studied, we analyzed only 40 service contracts. This is a small sample size for the number of service contracts at the U.S. Army MICC considering that the two centers we studied awarded over 1,400 contracts combined in FY2010 (MICC Headquarters, 2011). Due to this limited sample size, there may be drivers of management practices and performance in services acquisition that we did not capture in this study. We discuss



these potentially overlooked drivers in Chapters IV and V of this report and give recommendations for how further studies can supplement the limitations of this research project.

## **G. METHODOLOGY**

We conducted this research by collecting contract and management practice data from two MICC installations. In this research project, we focused on collecting objective-based data. We developed a data collection form (see Appendix A) that was geared toward achieving the objectives and answering the questions discussed previously. We ran a pilot study at one MICC DOC, Presidio of Monterey (POM). We then used the lessons learned from the pilot study to further refine the Data Collection Form. Once we finalized the form, it was deployed at two MICC centers. We analyzed the data we collected quantitatively and qualitatively to draw conclusions about management practices at those two MICC centers.

## **H. ORGANIZATION OF REPORT**

This report is organized into five chapters. Chapter I includes background information, the purpose of the report, research questions, the benefits and limitations of the project, and the research methodology we used. In Chapter II, we review literature related to services acquisition. We also examine several NPS research reports, DoD memorandums, and GAO reports. Our purpose in Chapter II is to explore previous studies in order to determine how this research project will help further those studies. In Chapter III, we present the mission and organization of the MICC. In Chapter IV, we describe the research methodology in more detail. We also outline the procedures we used for collecting and analyzing data. In Chapter V, we examine the collected data and present the findings of the analysis to help answer our three research questions. The information we present in Chapter VI summarizes the research by responding to the research questions, making recommendations to the U.S. Army MICC on acquisition management practices, offering ways to improve the data collection, applying this research to other DoD contracting units, and suggesting areas to consider for further research in the field of services acquisition.



## **I. SUMMARY**

In this chapter, we provided background information on services acquisition within the DoD and discussed how services acquisition ties in to the policies and objectives of the country's top leadership. The information we provided suggests that acquisition reform will not only improve the efficiency and effectiveness of service contracts, but also support a larger vision of financial and national security. In the next chapter, we review available literature pertaining to services acquisition within the DoD.



## **II. LITERATURE REVIEW**

### **A. INTRODUCTION**

In this literature review, we explore topics and research relevant to the acquisition management practices in the DoD. Our purpose is to establish a foundation on which this research project can build. First, we present the foundational theories that are used in contracting. Second, we provide an introduction to public management reform (PMR) as a tool for defense acquisition professionals to use to make improvements to acquisition management practices. Third, we discuss the service contracting processes and management practices used by the DoD in order to identify areas of performance shortfalls. Finally, we present a summary of prior NPS Acquisition Research Program (ARP) projects related to the field of DoD services acquisition to illustrate how this study builds on previous research.

### **B. THEORIES INFORMING SERVICE CONTRACTING**

This section describes the foundational theories applied to the field of contracting. The two theories we discuss are the agency and transaction cost theory. We present the conceptual framework of these theories and discuss how they are applied to the field on government contracting.

The agency theory describes the relationships between principals and agents (Eisenhardt, 1989). There are several principal–agent relationships in government contracting. The most prominent one is the relationship between the government (principal) and the contractor (agent). In the government–contractor relationship, the government has a requirement for a product or service that can be provided by the contractor. Both the principal and agent have objectives. These objectives may be aligned, but misaligned objectives typically lead to conflicting goals. Agency theory is concerned with these conflicting goals. It focuses on how contracts are planned, structured, awarded, and administered by the government (principal) to ensure its objectives are met through the contractor (agent; Rendon, 2010b).



The transaction cost theory takes into account indirect costs associated with a product or service (Williamson, 2010). In application, those analyzing the costs associated with a service contract must not consider only the contract price. They must also take into account administrative costs such as the time and resources spent by the government in the planning, solicitation, awarding, oversight, and closeout of the contract. Thus, when a proposal is made that claims to add value to the contracting process, both the costs and benefits must be taken into consideration.

While theory is conceptual, practice is reality. Bridging the gap between theory and practice requires a consideration for the organization to which the changes are being recommended. The Army tends to be a late adopter of transformation and technology, to be focused on quick and decisive actions, to have strong ties to the civilian population, and to embrace teamwork (Haynes, n.d.). Army Regulation 70-13 (Department of the Army [DA], 2010) has provided a roadmap for improving management and oversight of services acquisition. However, implementing these changes requires creative approaches to transforming an organization that is resistant to change and to regulating over aggressiveness when the expectation is to have tasks completed yesterday.

### **C. PUBLIC MANAGEMENT REFORM**

Pollitt and Bouckaert (2004) defined public management reform (PMR) as “deliberate changes to the structures and processes of public sector organizations with the objective of getting them to run better” (p. 8). In Chapter I, we presented examples of how the POTUS, SECDEF, and AT&L have been pushing for PMR, specifically in acquisition. At the Service level, Assistant Secretary of the Army for Acquisition, Technology, and Logistics (ASA[AT&L]) Lieutenant General William Phillips has announced his support for SECDEF Gates’ tail-to-tooth initiative by launching a review of the DoD acquisition process in order to reduce costs and gain efficiency, thereby helping to reduce overhead (Roosevelt, 2010).

Acquisition reform is not a new concept for the DoD. Acquisition reform began as early as 1970. The goals of the reform initiatives were to improve performance in the



acquisition process. Christie (2006) discusses some of the major acquisition reform initiatives, which include the following:

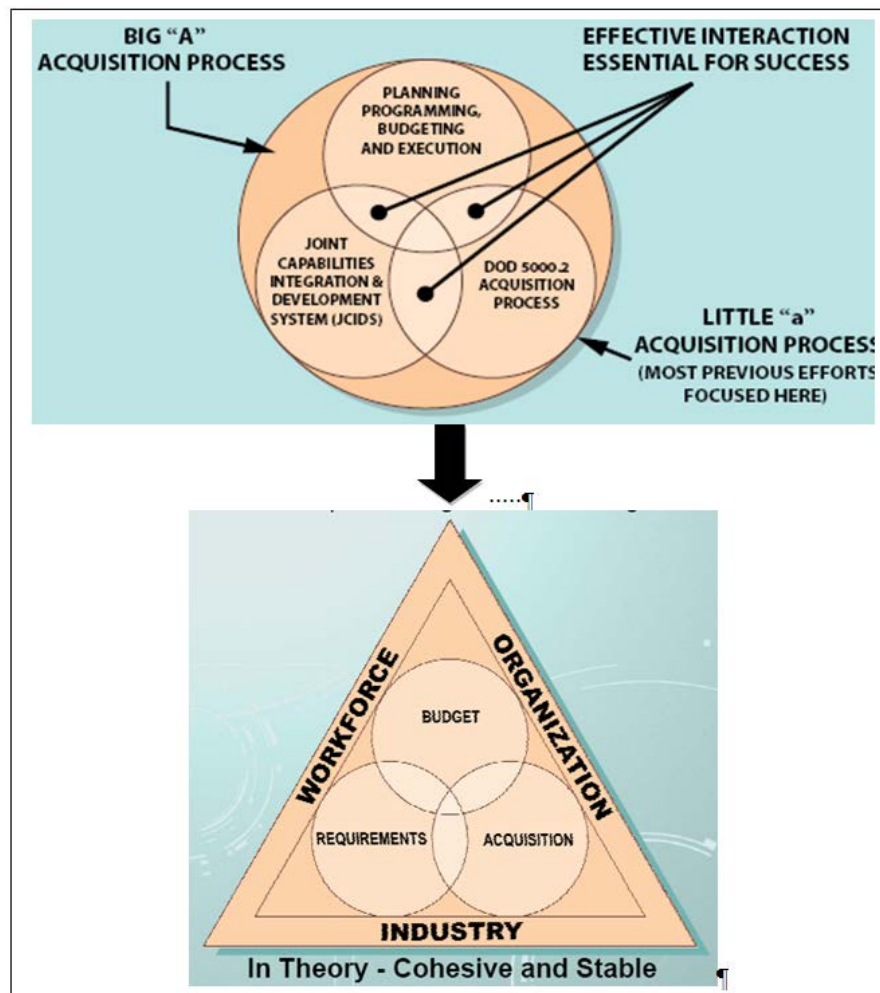
- Fitzhugh Commission, Blue Ribbon Defense Panel (1970),
- Steadman Review (1977),
- Carlucci Acquisition Initiative (1981),
- Packard Commission (1986),
- Goldwater–Nichols Act (1986),
- Defense Management Review (1989),
- Defense Science Board (DSB) Streamlining Study (1990, 1993–1994),
- Total System Performance Responsibility Initiative (1990s), and
- Spiral Development and Capabilities-Based Acquisition (2000s).

In research by Francis and Walther (2006), they found that acquisition and logistics reform has been a large part of the initiatives recently pushed by the SECDEFs. However, despite the drive for improvement, Brook and Candreva (2007) found in their research that “two decades of acquisition reform have not significantly improved program management practices” (p. 9). Similarly, the Army has pushed for acquisition reform. The Gansler Report by the Commission on Army Acquisition and Program Management in Expeditionary Operations (2007) identified that Army acquisition management had the same struggles in 2007 as it did in 2001.

Despite the reform efforts, there are still inherent problems with acquisition reform due to the conflicting interests of the components in the defense acquisition system. The 2006 Defense Acquisition Performance Assessment (DAPA) report (DAPA Panel) conceptualized the acquisition system—referred to in the report as the *Big A*—as shown in Figure 3. The *Big A* consists of three interdependent processes: requirements generation through a Joint Capabilities Integration and Development System (JCIDS); budgeting through Planning, Programming, Budgeting, and Execution (PPBE); and acquisition through the *little a*, the Defense Acquisition Management System. Rather

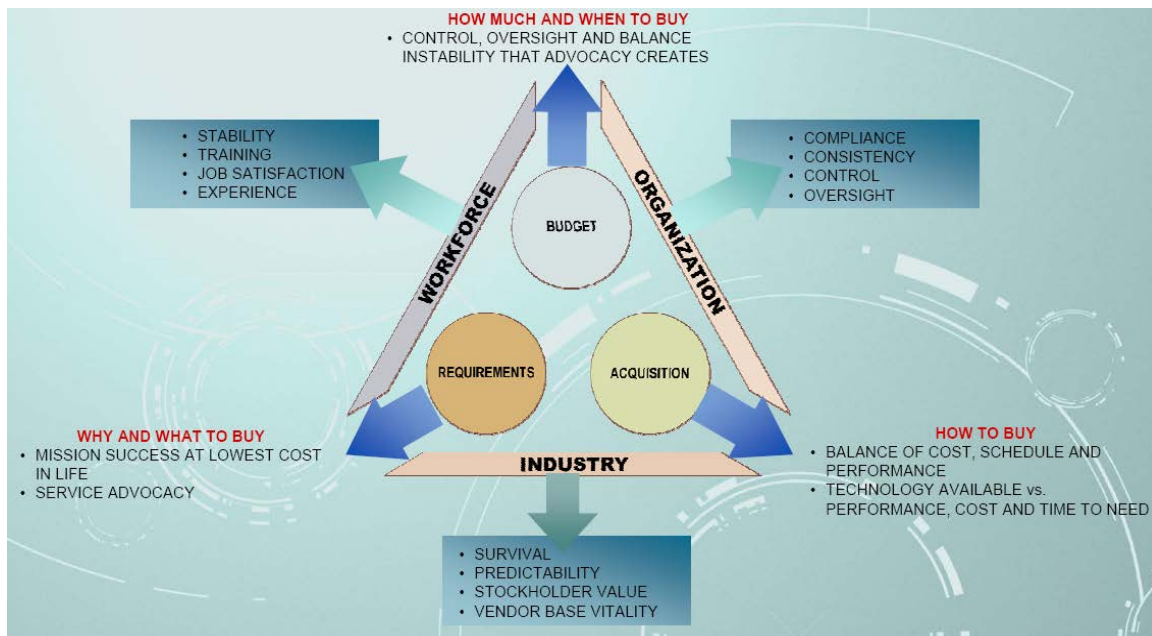


than being cohesive and stable as Figure 3 shows, the acquisition system is disconnected and unstable, as Figure 4 shows. The DAPA Panel (2006) observed that the system was complex and fragmented, leading to competing values and objectives among the three processes. Within each individual process, there are competing values as well. For instance, in *little a*, the contracting office needs to ensure that competition is exercised as much as possible by soliciting multiple suppliers for a service, whereas the supported unit may prefer a specific supplier through sole-sourcing.



**Figure 3.** Conceptual Acquisition System (*Big A*)  
(DAPA Panel, 2006)





**Figure 4.** *Big A in Practice—Disconnected and Unstable*  
(DAPA Panel, 2006)

The recommendations we make in this research report take into consideration previous attempts at making improvements to acquisition management. They also take into consideration some foundational principles in the field of PMR, including managing trade-offs, balances, limits, dilemmas, contradictions, and paradoxes of proposals (Pollitt & Bouckaert, 2004). For example, SECDEF Gates has called for reduction in overhead, but in order to improve performance in contractor oversight, there may be a need to increase the acquisition workforce. Another reform tool we reference in this research is Light's (1997) four tides of reform: scientific management (efficiency), war on waste (economy), watchful eye (fairness), and liberation management (entrepreneurialism; pp. 15–43). Light's (1997) concept looks at ways performance can be enhanced and takes into consideration if current efforts are new ideas or things that have already been attempted in the past.

#### **D. SERVICE CONTRACTS**

In this section, we show the broad scope and complexity of service contracts in the DoD in order to illustrate how this research is only the beginning of a larger study in





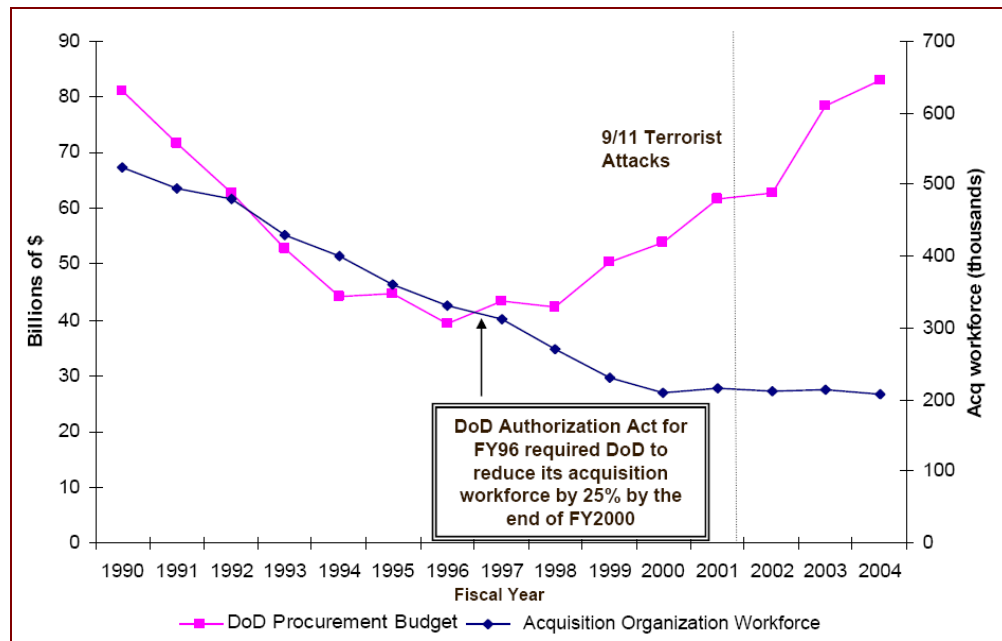
understanding the performance of service contracts. The service sector is one of the largest and fastest growing industries in the U.S. economy (Apte, Apte, & Rendon, 2010a). The DoD, the largest federal purchaser of services, spent \$200 billion in services during FY2008—a sum that constituted half of all DoD contractual obligations (GAO, 2002, 2009c). The DoD spends more on services than it does on the procurement of supplies and equipment combined, including weapons systems (Apte, Apte, et al., 2010a; GAO, 2003).

The Army has seen a similar pattern in services acquisition with an increase in service contract obligations and contractor full-time equivalents (FTEs). Table 1, which contains data collected from the GAO and the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA[M&RA]), depicts this increase. This increase in services comes with a decrease in the acquisition workforce as well. Figure 1 (see Chapter I) shows a level workforce from FY2001 through FY2008; however, Figure 5 shows that the acquisition workforce is actually on a decline, which is due to the retirement of an aging workforce. This decline in the acquisition workforce raises the concern for the performance of service contracts when the scope and value of work has increased but there is less manpower to manage it.

**Table 1. Service Contract Inventory in the Army for FY2008 and FY2009**  
(ASA[M&RA], 2009; GAO, 2010b)

|                                  | FY2008       | FY2009       |
|----------------------------------|--------------|--------------|
| Service Contract Obligations     | \$34 billion | \$43 billion |
| Contractor Full-time Equivalents | 213,000      | 262,000      |





**Figure 5.** DoD Procurement Budget and Acquisition Workforce Trends

(Commission on Army Acquisition and Program Management in Expeditionary Operations, 2007)

The dollar value spent on service contracts in the DoD is large, and managing the broad scope is even more complex. There are over 20 different types of services identified by the General Services Administration (GSA), each with a specific designation in the *Product and Service Codes Manual* (GSA, 1998). Therefore, to narrow this research project to a more manageable size, we analyzed only four Army product and service codes (PSCs). The four services we selected were PSC R (Professional, Administrative, and Management Support Services); PSC J (Maintenance, Repair, and Rebuilding of Equipment); PSC S (Utilities and Housekeeping Services); and PSC D (Automatic Data Processing and Telecommunications Services). We selected these PSCs, highlighted in Table 2, because they constitute over 60% of the service contracts in terms of dollar value for the Army for FY2009, and are common services used across all installations. PSC A (Research and Development) and PSC U (Education and Training) were not used because they are not common services across all military installations. PSCs R and D represent complex-type services, and PSCs J and S represent



simple-type services. Complex-type services are services that require unique skills in contractors and are more difficult to define than simple-type services.

**Table 2. Breakdown of Service Contracts in the Army for FY2009**  
(ASA[M&RA], 2009; GSA, 1998)

| PSC          | FY09<br>Obligation (\$) | % of<br>Total<br>Services | Service Category  |
|--------------|-------------------------|---------------------------|---|
| R            | 11,674,519,717          | 27.4%                     | Professional, Administrative, and Management Support Services |
| J            | 7,645,271,950           | 18.0%                     | Maintenance, Repair, and Rebuilding of Equipment              |
| A            | 6,472,306,540           | 15.2%                     | Research and Development                                      |
| S            | 5,015,441,637           | 11.8%                     | Utilities and Housekeeping Services                           |
| U            | 1,909,983,556           | 4.5%                      | Education and Training Services                               |
| D            | 1,689,891,641           | 4.0%                      | Automatic Data Processing and Telecommunication Services      |
| C            | 1,557,067,711           | 3.7%                      | Architect and Engineering Services—Construction               |
| B            | 1,247,897,017           | 2.9%                      | Special Studies and Analyses—Not R&D                          |
| M            | 1,160,055,305           | 2.7%                      | Operation of Government-owned Facility                        |
| Y            | 897,151,344             | 2.1%                      | Construction of Structures and Facilities                     |
| Q            | 489,328,909             | 1.1%                      | Medical Services  |
| V            | 455,413,266             | 1.1%                      | Transportation, Travel, and Relocation Services               |
| Z            | 454,447,794             | 1.1%                      | Maintenance, Repair, or Alteration of Real Property           |
| F            | 394,962,703             | 0.9%                      | Natural Resources Management                                  |
| L            | 353,565,935             | 0.8%                      | Technical Representative Services                             |
| K            | 237,852,282             | 0.6%                      | Modification of Equipment                                     |
| W            | 208,523,670             | 0.5%                      | Lease or Rental of Equipment                                  |
| O            | 201,915,384             | 0.5%                      | Other   |
| N            | 183,192,192             | 0.4%                      | Installation Equipment  |
| G            | 155,301,816             | 0.4%                      | Social Services   |
| P            | 90,103,239              | 0.2%                      | Salvage Services  |
| H            | 45,398,154              | 0.1%                      | Quality Control, Testing, and Inspection Services             |
| T            | 25,816,540              | 0.1%                      | Photographic, Mapping, Printing, and Publication Services     |
| E            | 6,270,563               | <1.0%                     | Purchase of Structures and Facilities                         |
| X            | 1,680,844               | <1.0%                     | Lease or Rental of Facilities                                 |
| <b>Total</b> | <b>42,573,359,708</b>   | <b>100.0%</b>             |   |

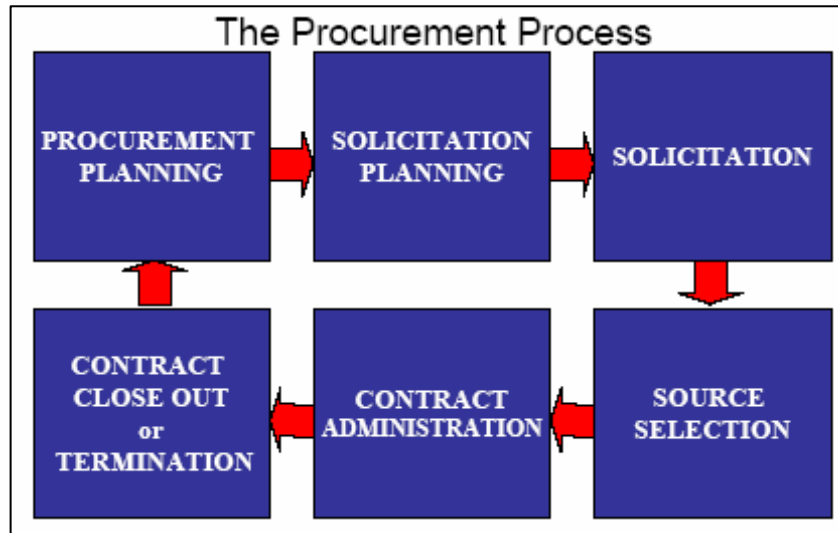
*Note.* The PSCs we studied in this research are highlighted in grey.

The main document that provides policy and guidance on federal acquisition is the Federal Acquisition Regulation (FAR, 2005), with further policy and guidance defined by the Defense Federal Acquisition Regulation Supplement (DFARS, 2010). Parts 37 and 237 pertain to services acquisition in the FAR and the DFARS, respectively.

Although service contracting is broad and complex, with various categories and rules, there are ways to standardize the process and life cycle in order to establish



common terminology and to streamline management practices. One common way to manage service contracts is through the six-phase procurement process illustrated in Figure 6.



**Figure 6.** Six-Phase Process in Procurement

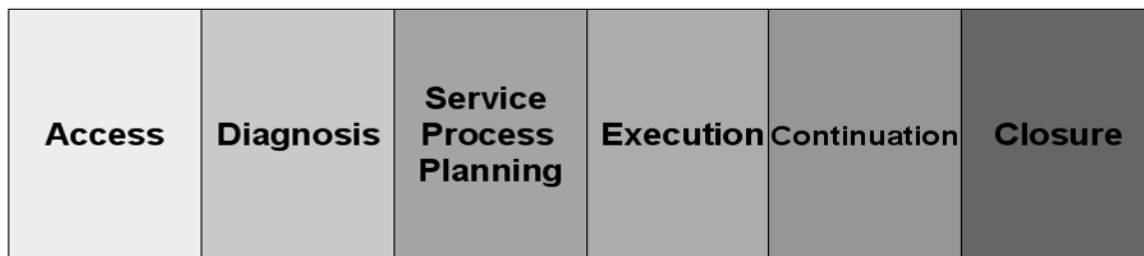
(Apte, Ferrer, Lewis, & Rendon, 2006)

First, the Procurement Planning phase develops a plan for the who, what, when, where, why, and how of procuring services outside the government. This phase includes translation of requirements into a statement of work (SOW) or performance work statement (PWS), market research, budget and cost estimates, identification of preliminary contracting methods, and risk analysis. Second, the Solicitation Planning phase develops documents in preparation for solicitation, such as the request for proposal (RFP). This phase identifies the specific contracting methods to be used and determines contract type, selection criteria for contract award, and finalization of the SOW or PWS. Third, the Solicitation phase includes the posting the solicitation under the agency's procurement portal. It includes advertising the requirements, answering contractor questions, and maintaining a database of prospective bidders. Fourth, the Source Selection phase receives and analyzes contractor proposals. This includes evaluation of contractor proposals based off of predetermined criteria and the selection of the contractor for award that provides the best value to the government. Fifth, the Contract



Administration phase begins after contract award. The purpose of this phase is to ensure that both the contractor and government are meeting the terms and conditions of the contract. The activities include pre-performance conferences, tracking contractor progress and performance, and management of contract modifications. Sixth, the final phase is Contract Closeout or Termination. Contracts can be terminated when both parties meet all their obligations in the contract, terminated for convenience by the government, or terminated for default when the contractor cannot meet the terms and conditions of the contract (Rendon & Snider, 2008).

Another common model used in acquisitions is the project life cycle illustrated in Figure 7. It is similar to the six-phase contracting model. The commonality of the two is that they follow a cradle-to-grave concept. The product or service is managed all the way from when a requirement emerges to the closeout where all parties have satisfied their obligations.



**Figure 7.** Project Life Cycle

(Apte & Rendon, 2007)

The Department of the Army (DA, 2010) has established policy and guidance in its *Management and Oversight of Service Acquisitions* (Army Regulation 70-13) that are based on the contracting processes and models of Figures 6 and 7. This regulation is organized by pre-award and post-award activities but still holds to the cradle-to-grave concept. An additional element presented in the regulation is the team approach, which includes roles and responsibilities for stakeholders within the government. This team approach provides an integrated effort. However, the concept can only work with an adequately staffed and trained workforce. This leads into the next section of service



contract management, in which the issues addressed all tie to two common themes, deficiencies in human capital and capable processes.

## **E. SERVICE CONTRACT MANAGEMENT**

Spotting problems early and often in the acquisition process can result in less costly resolutions. The GAO (2010a) found that “problems are much more costly to fix in later stages than early in the acquisition” (p. 2). However, the DoD continues to face challenges in employing sound business practices in service contracts (GAO, 2009b). The GAO (2007) reported the DoD’s management of services acquisition as being reactive, fragmented, and uncoordinated, leading to inefficient and ineffective performance. DoD contract management has been on the GAO’s (2010a) high-risk list for nearly two decades. For the Army, analyses by the GAO and the DoD Inspector General (DoDIG) show that the problem areas of acquisition management in service contracts fall into Phases I (Procurement Planning), IV (Source Selection), and V (Contract Administration) of the procurement process. Specifically, the Army faces challenges in generating requirements, evaluating prices to be fair and reasonable, and surveilling of contractors (Ermoshkin & Seifert, 2010). The remaining paragraphs of this section go into detail on each of these deficiencies, with a common theme that revolves around the deficiencies in human capital and capable contract management processes.

Clearly identifying, defining, and stating requirements is essential in the acquisition process. For example, research by Wardwell (1997) showed that the ambiguity in requirements and statements of work (SOW) can lead to legal claims and increases in the costs to acquire a service. However, there are instances in which requirements cannot be clearly defined until a later date. For example, in PSC R (Professional, Administrative, and Management Support Services), contracting for management services may be hard to define because the tasks are non-routine and unpredictable. One approach to help resolve requirement ambiguity is through performance-based services acquisition (PBSA). The FAR (2005) identifies PBSA as the preferred method for acquiring services (Subpart 37.102). This process focuses on the what (results) rather than on the how (means) of the procurement. The PBSA approach



allows for innovation and competition to occur among contractors in order to find different and better ways to satisfy a requirement, which ultimately leads to increased performance (Rau & Stammersky, 2009). Guiding principles by the Army to enforce the PBSA standard include the submission of requirements by acquisition personnel to senior management for review and approval and describing results rather than methods when developing contracts (DA, 2010). However, PBSA requires metrics to determine if contractors are satisfying requirements. Developing requirements, whether task based or performance based, still involves the human element. Thus, the themes of addressing the need for an adequate acquisition workforce and capable processes emerge.

Receiving a fair and reasonable price for a service can mean different things for different requirements. In lowest priced technically acceptable (LPTA) contracts, the contractor with the lowest price satisfying the minimum requirements gets awarded the contract. In best-value contracts, there may be tradeoffs between price and other non-priced related factors (quality, schedule, past performance). The government may be willing to pay more for higher quality service. However, the GAO (2006b, 2010c) has issued reports showing that the DoD continues to struggle with obtaining enough competition to get the lowest prices and with having clear rating factors to determine if the added benefit is worth the cost. Another pricing consideration is providing incentives to contractors. Again, the DoD faces challenges in maintaining fair and reasonable prices of contracts due to inconsistent implementation of incentive programs (GAO, 2006a, 2006b). The contract type can also play a significant role in pricing. Firm-fixed-price (FFP) contracts place the risk on the contractor, whereas cost-reimbursable contracts place the risk on the government. Knowing what pricing options to apply to a situation requires a trained and experienced workforce. To address these contract pricing issues, the Army (DA, 2010) has developed guiding principles. However, the common themes are seen again for requiring the right workforce and having capable processes.

Although the contractor is responsible for meeting the requirements of a contract, the government must still have control measures in place to ensure that its interests are protected. Investing government resources for control measures is a small price to pay to prevent discrepancies from spiraling out of control. Lack of contractor oversight can lead





to risks and waste and, in turn, can affect the performance of service contracts (Rau & Stammersky, 2009). GAO reports continue to find that the DoD lacks contractor surveillance in its service contracts (McMaster & Miranda, 2008; Rau & Stammersky, 2009). Part of the issue is that the government has inadequate metrics in place to assess the contractors (Solomon & Travieso, 2008). Another problem relates to having an acquisition workforce with sufficient skills. For example, the GAO assessed that if the Army would have had an adequate oversight staff, then it could have saved substantially on a logistics contract in Iraq (Rau & Stammersky, 2009). The Army's guiding principles on services acquisition emphasize the need for clear performance measures and for holding contractors accountable to meeting contract requirements (DA, 2010). Doing so requires an adequately trained oversight staff of quality assurance evaluators (QAEs), also known as contracting officer's representatives (CORs). The DA requires QAEs to have, at a minimum, training in the Defense Acquisition University course CLC-106, Contracting Officer's Representative with a Mission Focus (DA, 2010), to perform surveillance of service contracts. However, this again ties back to the need for an adequately staffed and trained acquisition workforce and the need for capable contract administration processes. Policies and plans are in place to ensure proper oversight, but there is still difficulty executing these policies and plans due to an inadequate workforce.

Figure 1 shows a trend of increasing obligations in service contracts for the DoD, but Figure 5 shows a decreasing trend in the ability of the acquisition workforce to manage these contracts. The GAO (2009a) recommended an increase in the workforce in order to improve the performance of services acquisition. However, increasing the size of the workforce will not necessarily solve the problem. Management of human capital has also been on the GAO's high-risk list since 2001 (GAO, 2009a). Having the right people doing the right work is essential for any program (GAO, 2010a). Thus, it is important to have adequate staffing in terms of size, but staff members must also have adequate training and experience to carry out their duties. Rau and Stammersky (2009) summarized in their report their findings on service contract management in the DoD and the DA:





While these obligations continued to rise, the size of the acquisition workforce was downsized without sufficient attention to requisite skills and competencies needed to manage service contracts. DoD continues to rely more and more on contractors to provide services despite longstanding problems with contract management that continue to adversely impact services acquisition outcomes. (p. 7)

#### **F. CONTRACT MANAGEMENT PROCESS CAPABILITY**

Contracts are only as successful as the processes that are used to create and manage them. Organization process capability is an important aspect of contract management. In an assessment of ACC contract management process capability using the Contract Management Maturity Model (Rendon, 2010a), most of the organizations observed tended to have the lowest level of process capabilities in the Contract Administration and Contract Closeout phases of the procurement process. Most organizations had Structured maturity levels in the Procurement Planning phase up to the Source Selection phase, but they only had Basic maturity levels in the Contract Administration and Contract Closeout phases (Rendon). These organizations had not reached optimized levels in any of the procurement process phases. As a result, they have opportunities available to them to improve their performance of services acquisition by enhancing their contract management process capability.

#### **G. PREVIOUSLY COMPLETED RESEARCH**

There has been a series of five ARP-sponsored research projects on services acquisition in the DoD over the past several years. The first two research projects, Services I (Apte, Ferrer, et al., 2006) and Services II (Apte & Rendon, 2007), were exploratory, and the researchers' intent was to gain an understanding of the types of services being acquired, the associated rates of growth in services acquisition, and the major challenges and opportunities present in the service supply chain. The next two research projects, Services III (Apte, Apte, & Rendon, 2008) and Services IV (Apte, Apte, & Rendon, 2009), were survey-based empirical studies aimed at developing a higher level of understanding of how services acquisition is currently being managed at DoD installations, which included the Air Force, Army, and Navy. The focus of the survey questions was on three areas: contract characteristics (degree of completion,



contract types, and use of incentives); acquisition management methods (degree of competition, contract types, and use of incentives); acquisition management methods (regional- versus installation-level acquisition, use of program management, project leadership); and other program management issues (use of the life cycle approach, adequacy of staffing levels, length of assignments, and level of training). The analysis of survey data indicated that the current state of services acquisition management suffers from several deficiencies, including deficit billet and manning levels (which are further aggravated by insufficient training and the inexperience of acquisition personnel), and the lack of a strong management approach.

The Services V research project (Apte, Apte et al., 2010a) analyzed and compared the results of the primary data collected in the Services III and IV reports, which involved Air Force, Army, and Navy contracting organizations, so as to develop a more thorough and comprehensive understanding of how services acquisition is being managed within individual DoD departments. In the conclusion of the research in the Services V report, the researchers (Apte, Apte, et al., 2010a) indicated that contracts for the analyzed services were predominantly competitively bid, fixed-price contracts. In addition, services acquisition for the Navy was predominantly managed at the regional level, whereas the Air Force and the Army managed services acquisition using a project-team approach in which the procurement contracting officer (PCO) predominantly led the project team. The study (Apte, Apte, et al., 2010a) also found that the PCO owned the service requirement (less frequently, but significantly) for the Army and Navy, and the PCO provided contractor surveillance approximately half of the time for the Navy. The report concluded that project life cycles were not consistently used in services acquisition in any of the military Services.

The Services I through V research has resulted in a total of 14 papers. A comprehensive, high-level understanding of services acquisition in the DoD has resulted from these research projects. The next logical step would be a more in-depth study in each of the branches of the DoD, more specifically, the Army.



## **H. SUMMARY**

This chapter provided an overview of previous research in the field of DoD services acquisition management. The purpose of the chapter was to establish the foundation on which this research project builds and to apply previous studies in DoD services acquisition specifically to Army MICC centers. The information presented in this chapter showed how the different elements of service contract management are integrated and showed that an incremental approach is required to analyze the system due to its broad scope and complexity. Chapter III introduces Army contracting and the MICC.



### **III. MISSION AND INSTALLATION CONTRACTING COMMAND**

#### **A. INTRODUCTION**

The purpose of this chapter is to provide an overview of the Army Contracting Command (ACC) and to explain where the Mission Installation Contracting Command (MICC) falls within the ACC. In this chapter, we first describe the shortfalls in Army contracting and the issues that resulted in the establishment of a new contracting command. In the second part of the chapter, we outline the MICC's purpose, mission, and organizational structure.

The Gansler Commission's (Commission on Army Acquisition, 2007) reported that the Army has a serious deficiency in contract and contract management personnel. During Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), numerous contracting scandals occurred. These scandals made it apparent that the Army lacked trained and experienced contracting officers (KOs). Based on this information, the Army established the ACC.

The Gansler Commission's (Commission on Army Acquisition, 2007) report recommended four areas for the Army to work on:

- 1) Increase the stature, quantity, and career development of military and civilian contracting;
- 2) Restructure the organization and restore responsibility to facilitate contracting and contract management in expeditionary and continental United States (CONUS) operations;
- 3) Provide training and tools for overall contracting activities in expeditionary operations; and
- 4) Obtain legislative, regulatory, and policy assistance to enable contracting effectiveness in expeditionary operations. (pp. 47–58)

The issues the Army first focused on were the number of contracting personnel and the increase of contracting actions. During the mid-1990s to early 2000, the Army



downsized the number of contracting personnel, but there was an increase in the number and complexity of contracting actions. During the 1990s, the Army determined that many services provided by both military personnel and DoD civilians could be completed more effectively and for less cost by contractors. As a result, the number of contractors increased as the number of experienced contracting personnel decreased. By the mid 2000s, there was approximately a seven-fold workload increase on Army contracting personnel (Commission on Army Acquisition, 2007).

The second issue the Army focused on was the restructuring of the contracting organization in order to promote coordination among contracting activities. The Army's contracting resources were dispersed throughout numerous commands, with no command having direct authority over all of the contracting offices. In addition to a dispersed organization, there were no general officer positions available in the contracting field. This lack of a flag officer created problems with planning and supporting operations. The Gansler Commission's (Commission on Army Acquisition, 2007) report stated,

These flag officers would have been at the table planning and supporting the operation. Another benefit of having contracting flag officer positions is the increased attractiveness of the contracting corps as a career profession to quality officers that aspire to flag officer rank. (p. 13)

For the third issue, the Gansler Commission's (Commission on Army Acquisition, 2007) report observed that there was an extreme shortage of Army contracting staff who were fully trained and experienced enough to support expeditionary operations. Due to the Army's downsizing of contracting personnel, approximately 3% of all the Army contracting personnel were active duty military by 2005 (Commission on Army, 2007). This lack of personnel has caused the Army to rely heavily on contractors to provide contracting support for overseas contracting operations.

## **B. ACC MISSION AND ORGANIZATION**

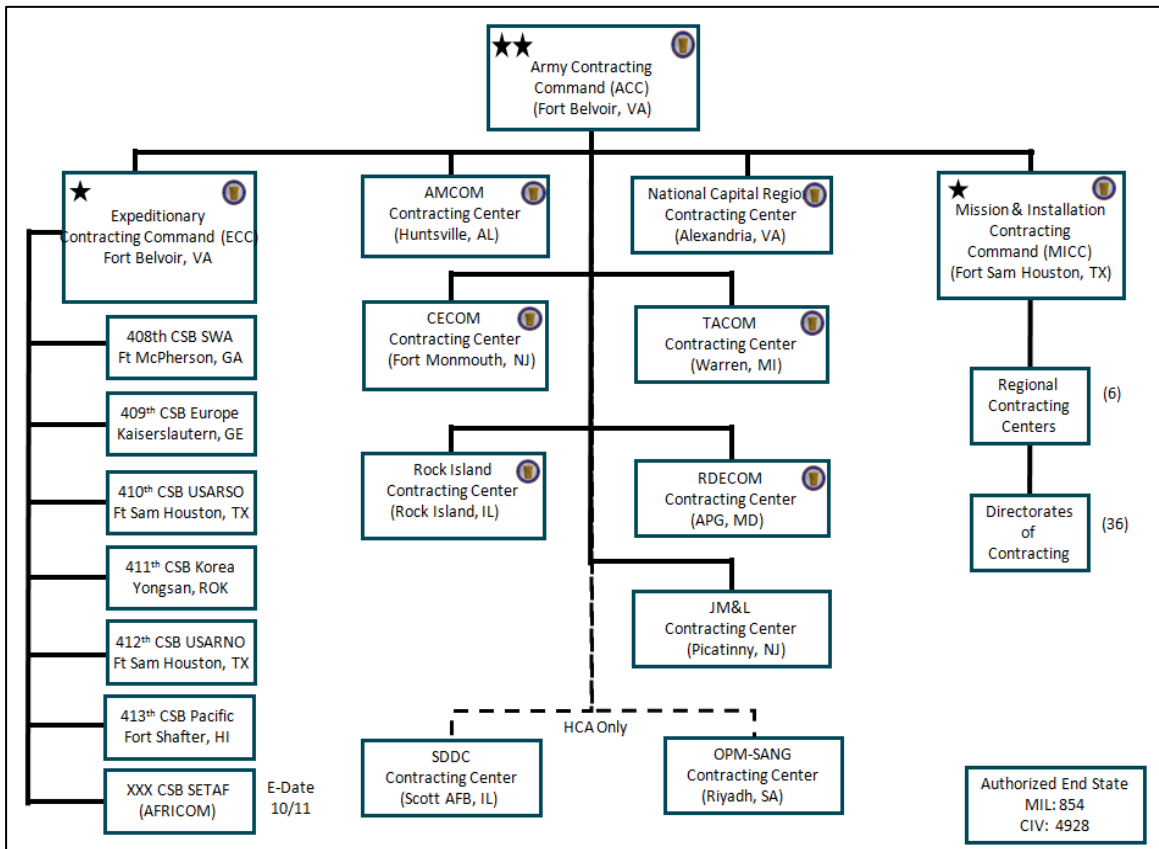
Due to the reasons outlined previously, it was evident that the Army needed to implement changes to improve its contracting competence and capability. The Army agreed that the need for fully trained and experienced KOs for future expeditionary



operations was mission critical (Commission on Army Acquisition, 2007). In order to accomplish this requirement, the Army established the ACC.

The mission of the ACC is to provide global contracting support to warfighters through the full spectrum of military operations. It reports directly to the Army Material Command (AMC). The recent reorganization of Army contracting units is illustrated in Figure 8. The reorganization allows for better oversight and management of contingency contracting, program management, and installation-level contracting. The ACC has two subordinate commands: the Expeditionary Contracting Command (ECC) and the Mission and Installation Command (MICC). Each of the subordinate commands is led by a brigadier general. The ECC covers contingency contracting, supporting the warfighter through seven Contract Support Brigades. The MICC covers CONUS installation contracting, supporting the warfighter through 41 centers and DOCs. Finally, there are nine specialty contracting centers that are responsible for specific programs or geographical areas.





**Figure 8. ACC Organization Chart**

(ECC Headquarters, 2009)

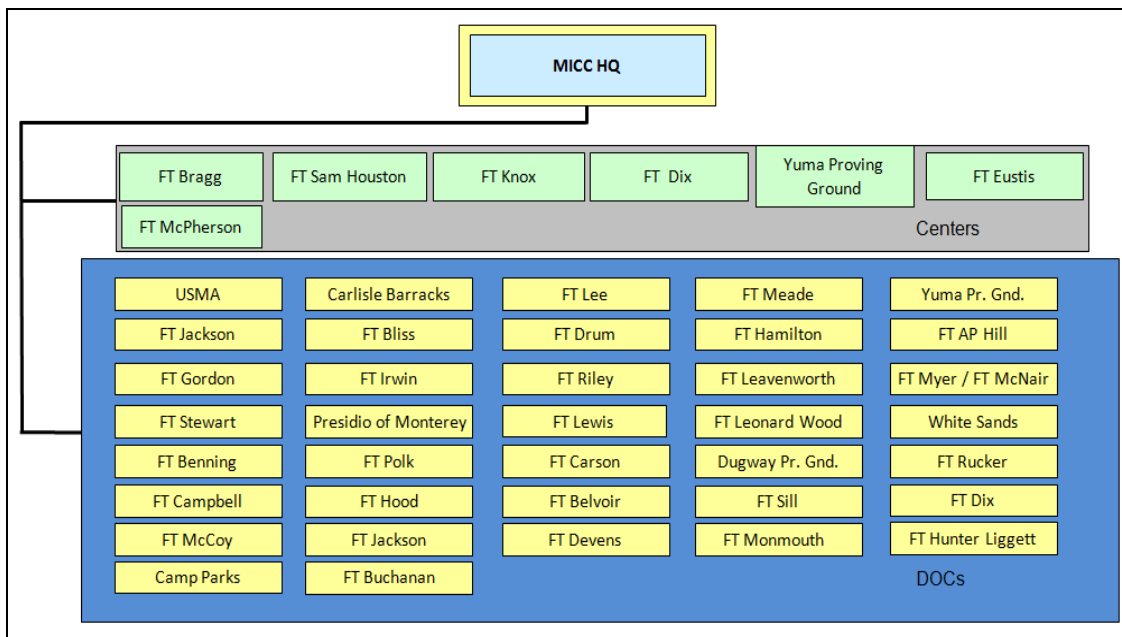
### C. MICC PURPOSE, MISSION, AND ORGANIZATION

As part of the Army's Generating Force, the mission of the MICC is to plan, integrate, award, and administer contracts throughout the Army Force Generation (ARFORGEN) cycle by supporting the Army Commands (ACOMs), Direct Reporting Units (DRUs), U.S. Army, North (USARNORTH), and other organizations in order to provide the best value for the mission, for the Soldiers, and for their families (ACC, 2010). The MICC functions as an integral and indispensable partner in accomplishing the Army's mission through contracted materiel and services solutions. With the establishment of the MICC, improved coordination and responsiveness has occurred, which has resulted in superior contracting support. Also, the MICC has a general officer billet, which not only serves as an advocate for the contracting community but also allows for ambitious KOs to achieve the rank of general. The establishment of the MICC



has provided a framework for contracting personnel to provide excellent contracting support.

The MICC is organized with seven regional contracting centers and 34 Directorate of Contracting (DOCs). Currently, the centers and DOCs report directly to MICC headquarters, as shown in Figure 9. Planning is in place to restructure the organization so that the DOCs report to the centers as intermediaries for MICC headquarters.



**Figure 9.** MICC Organization Structure  
(MICC Public Affairs Officer, 2010)

Table 3 shows a breakdown of the PSCs for contracts awarded by the MICC in FY2009. The highlighted PSCs are the ones we studied in this research. As discussed in Chapter II, these PSCs were selected because they constitute the largest part of the service contracts for the Army in terms of dollar value and are common services used across all installations. PSC A (Research and Development), PSC M (Operations of Government-owned Facilities), and PSC U (Education and Training) were not used because they are not common services across all military installations. PSCs R and D represent complex-type services and PSCs J and S represent simple-type services. For



this research, two MICC centers were selected for data collection, which we refer to as Center A and Center B in this report.

**Table 3. Breakdown of MICC Service Contract Dollar Obligations for FY2009**  
(ASA[M&RA], 2009; GSA, 1998)

| PSC          | % of \$FY09 Obligations<br>for Service Contracts | Service Category   |
|--------------|--|--|
| R            | 24.44%   | Professional, Administrative and Management Support Services |
| U            | 19.82%   | Education and Training Services                              |
| D            | 11.79%   | Automatic Data Processing and Telecommunication Services     |
| S            | 8.95%  | Utilities and Housekeeping Services                          |
| M            | 8.16%  | Operation of Government-Owned Facility                       |
| A            | 6.40%  | Research and Development                                     |
| J            | 6.16%  | Maintenance, Repair, and Rebuilding of Equipment             |
| C            | 4.58%  | Architect and Engineering Services—Construction              |
| Z            | 3.21%  | Maintenance, Repair, or Alteration of Real Property          |
| Y            | 2.98%  | Construction of Structures and Facilities                    |
| N            | 0.96%  | Installation Equipment                                       |
| B            | 0.74%  | Special Studies and Analyses—Not R&D                         |
| F            | 0.40%  | Natural Resources Management                                 |
| L            | 0.37%  | Technical Representative Services                            |
| W            | 0.27%  | Lease or Rental of Equipment                                 |
| V            | 0.25%  | Transportation, Travel, and Relocation Services              |
| T            | 0.17%  | Photographic, Mapping, Printing, and Publication Services    |
| Q            | 0.16%  | Medical Services   |
| H            | 0.09%  | Quality Control, Testing and Inspection Services             |
| P            | 0.04%  | Salvage Services   |
| G            | 0.03%  | Social Services  |
| X            | 0.01%  | Lease or Rental of Facilities                                |
| O            | 0.01%  | Other  |
| <b>Total</b> | <b>100.0%</b>                                    |  |

*Note.* The PSCs we studied in this research are highlighted in grey.

#### D. SUMMARY

In this chapter, we laid the foundation for the study of the MICC. We presented the issues outlined in the Gansler Report that ultimately led to the reorganization of the Army's contracting units. As a result of this reorganization, the MICC was established to provide contracting services for CONUS installations. In this chapter, we also presented a discussion of the service contracts awarded by the MICC broken down by PSC. This data, which we obtained through the MICC, is the source on which this research is based. We present the methods for collection and analysis of this data in Chapter IV.



## **IV. RESEARCH METHODOLOGY**

### **A. INTRODUCTION**

In this chapter, we provide an overview of how we collected and analyzed data in order to achieve the objectives and answer the research questions discussed in Chapter I. We discuss how we selected the participants for this research, the data collection form questions, and what information we extracted from the data. In this chapter, we also include a description of the qualitative and quantitative methods we used in analyzing the data collected from the Army MICC centers.

### **B. PARTICIPATION SELECTION**

As we discussed in Chapter III, the MICC is configured with seven regional contracting centers and 34 DOCs. Our overall intent in this research was to conduct an in-depth analysis of the service contract procurement methods and of the management methods used at two of the MICC Regional Contracting Centers as well as to build a data collection form that can be used for future research on the remaining five Regional Contracting Centers and on all 34 MICC DOCs. We conducted a pilot study using the data collection form at one MICC DOC. The purpose of the pilot was to allow for the refinement of the questions on the form and to identify any shortcomings of the data analysis tool. After adjustments in the pilot test, we commenced data collection at two MICC centers. Both of these locations were Regional Contracting Centers and had a wide variety of service contracts that we could analyze. We analyzed the collected data quantitatively and qualitatively in order to draw conclusions about management practices at the MICC centers. We also collected data from five different service contracts for each of the following codes: PSC R (Professional, Administrative, and Management Support Services); PSC J (Maintenance, Repair, and Rebuilding of Equipment); PSC S (Utilities and Housekeeping Services); and PSC D (Automatic Data Processing and Telecommunications Services). We used a total of 20 contracts at each MICC center for analysis in this research.



## **C. DATA COLLECTION QUESTIONS**

An example of the data collection form is included in Appendix A. We developed the data collection form to answer the following questions:

- 1) Do the contract characteristics differ for different types of services?
- 2) Do the type of services being acquired affect the management practices being used?
- 3) Does the capacity for carrying out acquisition-related work affect the management practices being used?

Part I of the form focuses on contract characteristics, including type of service contract, solicitation approach, value, and award basis. Part I also collects information on management practices, including whether a team approach was used, the number of people assigned to the contract, the requirements generation, the number of modifications, the contract surveillance, and the contract closeout.

Part II of the form focuses on the capacity of the contracting offices in relation to their management practices. The questions in Part II provide the number and dollar value of service contracts awarded in FY2010, the annual budget for the service contracts staff, the number of billets authorized and filled at each contract office, and the training level and certification of each contract staff member. Other questions address the amount of experience and the average workload. At the end of Part II, we gave participants an opportunity to offer feedback such as concerns, comments, and recommendations for improving the data collection form.

## **D. ANALYTICAL PROCESS**

We used descriptive and inferential statistics to analyze the data collected from the two MICC centers. In Chapter V, we present nominal (qualitative) and interval (quantitative) data in graphical and tabular formats. We draw relationships from these graphs and tables to help answer the three research questions identified in Chapter I. In order to support these relationships, we use information from the literature review to identify the drivers of acquisition management practices at the two different MICC centers. We also analyze the similarities and differences between the two centers. To



test the relationship between the different drivers of performance in service contracts, we applied a chi-squared test of a contingency table using the following equation:

$$\chi^2 = \sum_{i=1}^k \frac{(f_i - e_i)^2}{e_i} \quad (1)$$

In Equation 1,  $k$  is the number of cells in the cross-classification table,  $f$  is the observed value, and  $e$  are the expected values. The chi-squared value ( $\chi^2$ ) corresponds with a  $p$  value in a chi-squared distribution table. A lower  $p$  value indicates a stronger relationship between two variables.

## E. SUMMARY

In Chapters I through IV, we laid the foundation for this research: In Chapters I and II, we discussed the significance of this research; in Chapter III, we discussed where the data was collected from; and in Chapter IV, we described how the data was collected and analyzed. In the next two chapters, we present the findings of our research and the applications from the data we collected. In Chapter V, we present the results and analysis of the data we collected and discuss possible reasons why the data behaved as it did. In Chapter VI, we summarize the entire research, draw conclusions about the findings, and provide recommendations for further studies.



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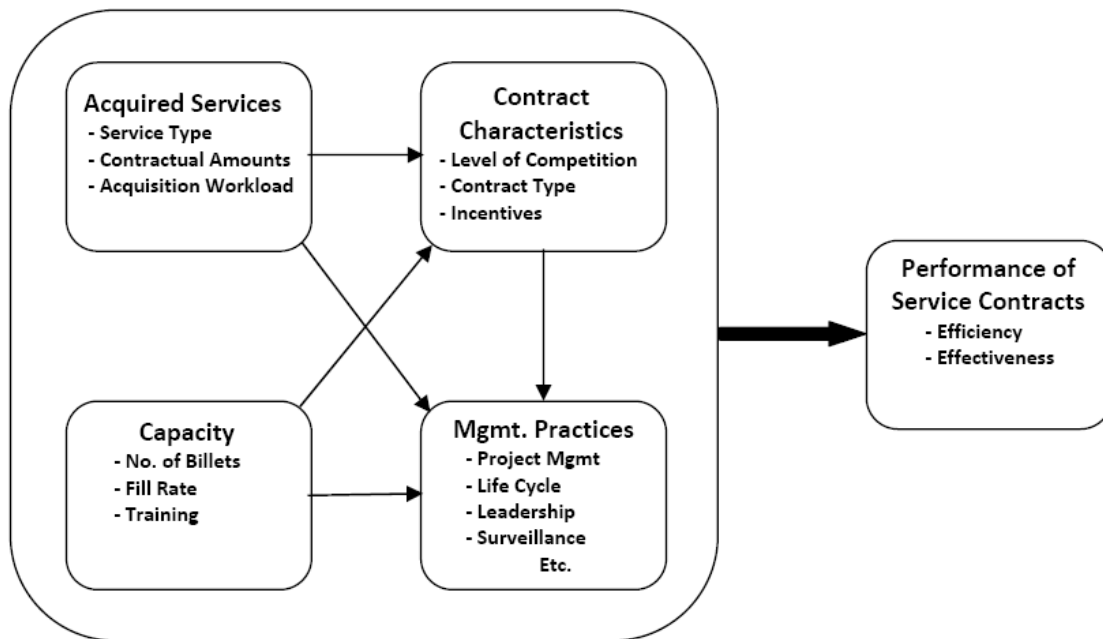


## V. RESULTS AND ANALYSIS

### A. INTRODUCTION

In Chapter V, we present an analysis of the data we collected in order to answer the three questions proposed for this research:

- 1) Do the contract characteristics differ for different types of services?
- 2) Do the types of services being acquired affect the management practices being used?
- 3) Does the capacity for carrying out acquisition-related work affect the management practices being used?



**Figure 2. Conceptual Model: Drivers of Acquisition Practices and Performance**  
(Apte, Apte et al., 2010b)

Figure 2 from Chapter I is re-presented here to help illustrate the three questions visually. We answer each question with supporting data through qualitative and quantitative approaches. We used chi-squared hypothesis testing to determine relationships between service types, contract characteristics, and management practices in contracting. For this study, the significance level and the strength of the corresponding



relationship shown in Table 4 will be followed as the basis for the conclusions we draw in our analysis. Appendix B provides the details for the chi-squared calculations we present in this chapter.

**Table 4. Chi-Squared Hypothesis Testing Significance Level**

| Significance Level                            | Strength of Relationship |
|---|--------------------------|
| $0\% \leq \text{significance} < 33.33\%$      | Strong                   |
| $33.33\% \leq \text{significance} < 66.67\%$  | Moderate                 |
| $66.67\% \leq \text{significance} \leq 100\%$ | Weak                     |

The data from this research provide insight into the management practices used by Army contracting organizations. This data, however, is only a small fraction of the contracting work that is carried out by the Army MICC centers and DOCs. Although the sample size from this study is small compared to the entire population, the information we collected will help guide the direction of future studies.

## **B. SERVICE TYPE AND CONTRACT CHARACTERISTICS**

The data from our study shows that there is evidence of a moderate relationship between contract characteristics and service type, as conceptualized in Figure 2. From the data we observed, complex-type service contracts had more sole-source awards than simple-type service contracts, leading to the increased use of other than the lowest priced technically acceptable (LPTA) award basis. Complex-type service contracts also had a higher dollar value and required more modifications than simple-type service contracts. However, we also observed from the study that both complex- and simple-type service contracts had the same contract characteristics. These observations include the fact that all contracts were awarded FFP and none had any incentive or award fees. A summary of the significance levels between service types and contract characteristics is shown in Table 5. The data in Table 5 show that there is a moderate relationship between service type and contract characteristics, but there are other factors involved that drive contract characteristics besides service type.



**Table 5. Summary of Chi-Squared Test for Service Type to Contract Characteristics**

| <b>Factor 1</b> | <b>Factor 2<br/>(Contract Characteristic)</b> | <b>Significance Level</b> | <b>Strength of Relationship</b> |
|-----------------|---|---------------------------|---------------------------------|
| Service Type    | Solicitation Type                             | 49%                       | Moderate                        |
| Service Type    | Award Basis                                   | 49%                       | Moderate                        |
| Service Type    | Contract Cost (Base Value)                    | 34%                       | Moderate                        |
| Service Type    | Number of Modifications                       | 49%                       | Moderate                        |
| Service Type    | Award Cost Structure                          | 100%                      | Weak                            |
| Service Type    | Incentive/Award Fees                          | 100%                      | Weak                            |

### **1. Solicitation Type**

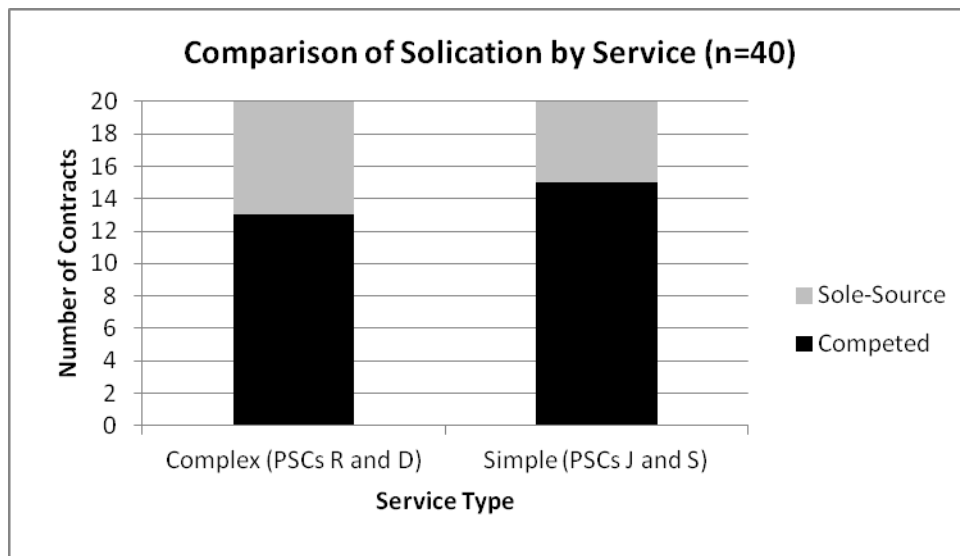
Solicitation type refers to how contracts were advertised, either through full and open competition or by sole source. Figure 10 shows the breakdown of contracts by service type and solicitation type; complex-type service contracts had more sole-source solicitations than simple-type service contracts. A supporting argument is that complex-type services may require unique skills, which limit the eligible suppliers. For example, in one of the contracts we observed with a PSC D (complex type), there was a need for a software program, but only one supplier was available that could meet the requirements of the contract, and required sole-source solicitation. In another contract we observed that had PSC S (simple type), there were several suppliers available that could provide custodial services, which is not a unique requirement, so the availability of multiple suppliers allowed for the use of full and open competition. Another possible reason for using different solicitation types involves the agency theory, in which the customer may want to go sole source with a specific vendor for a service, but the contracting office must use full and open competition to adhere to contracting regulations.

However, uniqueness of requirements and a limited number of suppliers are only two reasons why a contract may be solicited through sole source. Twelve of the 40 contracts we observed were solicited through sole source; the justifications for these solicitations are shown in Figure 11. Half of the justifications for sole-source solicitations were because of set-aside programs, such as Small Business (8A), National Industries for the Blind (NIB), and National Industries for the Severely Handicapped (NISH). Therefore, these set-aside programs show that other factors drive contract

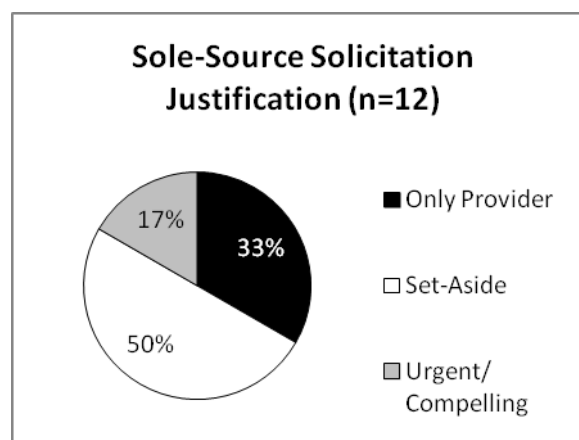




characteristics and not just service type. A chi-squared hypothesis test shows that the correlation between service type and solicitation type is significant at 49%, as seen in Table 5, which corresponds to a moderate relationship between these two variables. However, there is still evidence that contracts are being competed to the fullest extent whenever possible. As Figure 10 shows, both complex- and simple-type service contracts were solicited more often through competition rather than by sole source. This conforms to the FAR (2005, Part 6) and to other statutory requirements to use full and open competition when possible.



**Figure 10.** Analysis of Solicitation and Service Types



**Figure 11.** Reasons for Sole-Source Solicitation



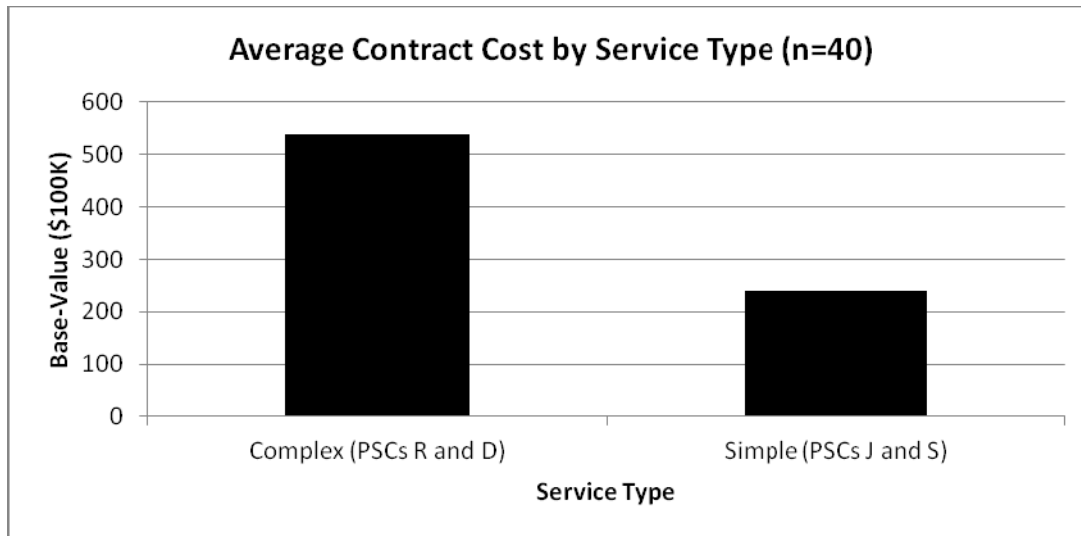
## **2. Award Basis**

Award basis is the method for selecting which contractor to award to. The categories include awarding to the contractor with the lowest priced technically acceptable (LPTA) offer, negotiating the contract award, or using special programs to determine which contractor will get the award. In Table 5, there is a moderate relationship between service type and award basis, with a significance level of 49%. This is consistent with the relationship for service type and solicitation type, for the same reasons as discussed previously. All of the contracts that we observed that were solicited through full and open competition were awarded based on LPTA. However, when a sole-source solicitation was used, other methods for determining best value and fair and reasonable price were implemented. A possible explanation for why LPTA was the preferred method can be attributed to the transaction cost theory, which may explain why contracting offices may have been discouraged from using other methods with higher administrative burdens.

## **3. Contract Value**

Complex-type service contracts also had a higher dollar base value than simple-type service contracts, as seen in Figure 12. The chi-squared hypothesis test shows that there is a moderate relationship between service type and contract dollar value, with a significance level of 34% (see Table 5). One possible reason for this is that complex-type services may require a higher labor skill set. For example, in one of the contracts we observed with a PSC R (complex type), there was an annual requirement for a medical instructor. Another contract we observed had a PSC S (simple type) with an annual requirement for a groundskeeper. The labor rate for the medical instructor was higher than the labor rate for the groundskeeper, which in turn created a higher contract cost for the complex-type service contract. Another possible reason why complex-type services cost more is tied to the availability of suppliers, as explained in the previous paragraph. With few, or only one, suppliers, there may be less incentive for a supplier to offer its lowest price.



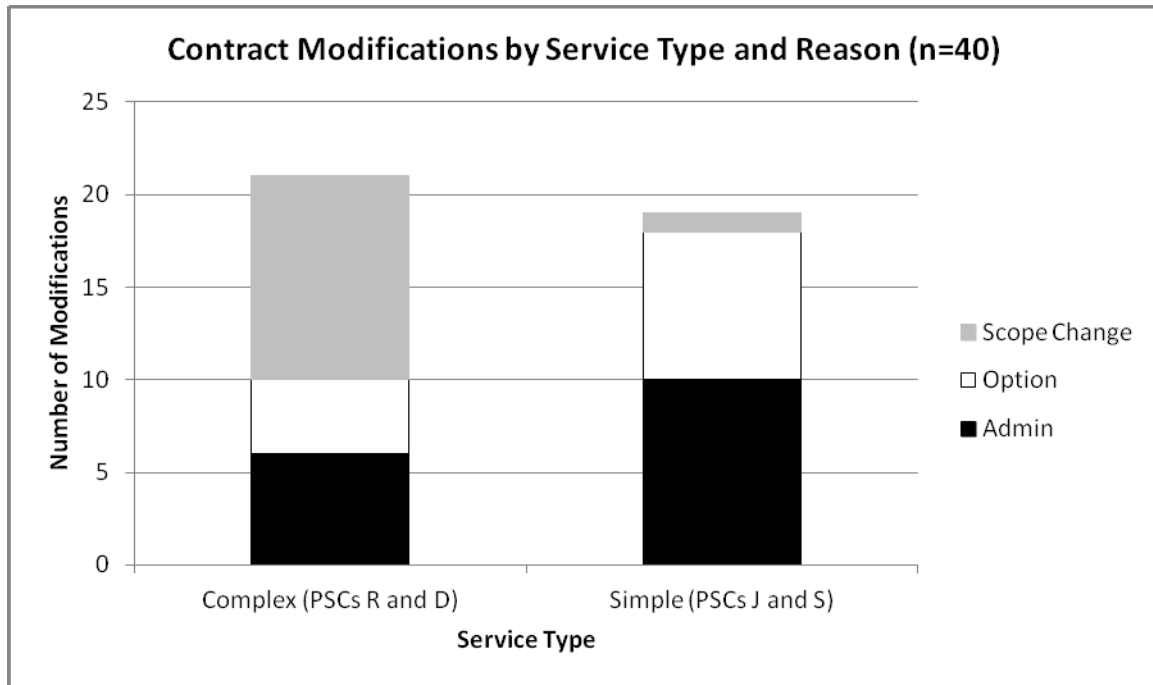


**Figure 12.** Average Base Cost of Contracts

#### **4. Modifications**

The types of modifications included: changes to the scope of work, the exercising of option years, or administrative changes. Complex-type service contracts had more modifications than simple-type service contracts, as shown in Figure 13. There were more scope-change modifications for complex-type service contracts than simple-type service contracts. There were also more modifications for exercise of options in simple-type service contracts than complex-type service contracts. A possible reason ties in with the agency theory when the contractor misinterprets the customer requirements, thus leading to a possible modification of the contract. Another possible reason for these two observations is that complex services may be more difficult to define and may lead to more modifications to further refine requirements when the situation arises.





**Figure 13.** Total Number of Modifications for Contracts by Service Type

For example, a contract with PSC D (complex type) had scope-change modifications because it was not clear how many minutes would be used on a cellular phone contract; hence, the charge for minutes was adjusted periodically based on the actual number of minutes used. In a contract with PSC S (simple type), the need for lunch service did not require any scope-change modifications because the quantity of service was the same every month. However, the contract had modifications to exercise option years because of the repetitive, non-changing nature of this requirement. Although there are more administrative modifications in simple-type service contracts, these modifications are driven more by the organization rather than by the service type. For example, the administrative modifications made in both the complex- and simple-type service contracts we observed were due mainly to the reorganization of the contracting office at one of the centers rather than to service type. A chi-squared hypothesis test shows a moderate relationship between service type and the number of contract modifications, with a significance level of 49% (see Table 5). Thus, service type does affect the contract characteristic of the number of modifications, but there are other factors not related to service type that can also affect the number of contract modifications.



## **5. Award Cost Structure and Incentive/Award Fees**

The award cost structure is the method for how contractors are reimbursed, either through FFP or cost reimbursement. Although there is evidence that service type affects contract characteristics, the data we observed for award cost structure and incentive/award fees show that other factors are involved. A chi-squared hypothesis test between service type to award cost structure and use of award and incentive fees shows that there is a weak relationship among these variables, with a significance level of 100% (see Table 5). For example, all of the contracts we observed were awarded FFP with no incentive or award fees. The complex- and simple-type service contracts we observed were commercially available and standardized with prices consistent among competitors. There is little risk and uncertainty in these commercial services. They do not require extra consideration to incentivize suppliers. This is different from research and development type services where a cost-reimbursable contract with an award or incentive fee is required to motivate contractors to take on the higher risk and uncertainty associated with this type of work.

Another consideration for using FFP without incentive or award fees is that there is an additional burden of having to administer cost-reimbursable contracts as well as incentive or award fees. This is related to the transaction cost theory. The benefits (e.g., higher level of service) may not exceed the costs (e.g., higher pricing) the manpower to track the labor and materials for cost-reimbursable contracts and coordinating boards to determine if a contractor is deserving of a reward for high performance).

## **C. SERVICE TYPE AND MANAGEMENT PRACTICES**

There is a moderate relationship between service type and management practices based on the data we collected. However, we did observe that there is an indirect relationship between service type and management practices, with service type affecting management practices through contract characteristics, as conceptualized in Figure 2. This indirect relationship is seen with the following management practices: the use of independent government estimates (IGEs), identification and changes to requirements, and personnel assigned to perform contract management oversight. We observed



management practices that were consistent across all of the MICC centers in our study, regardless of service type, including the use of a team approach, personnel assigned to manage the contracts, a KO assigned as the contracting lead, timeframes for award of contracts, and focus on pre-award for contract documentation.

A summary of the significance levels between service types and management practices is shown in Table 6. The data in Table 6 indicate that there is a moderate relationship between service type and management practices. However, there is a strong indirect relationship between service type and management practices through contract characteristics.

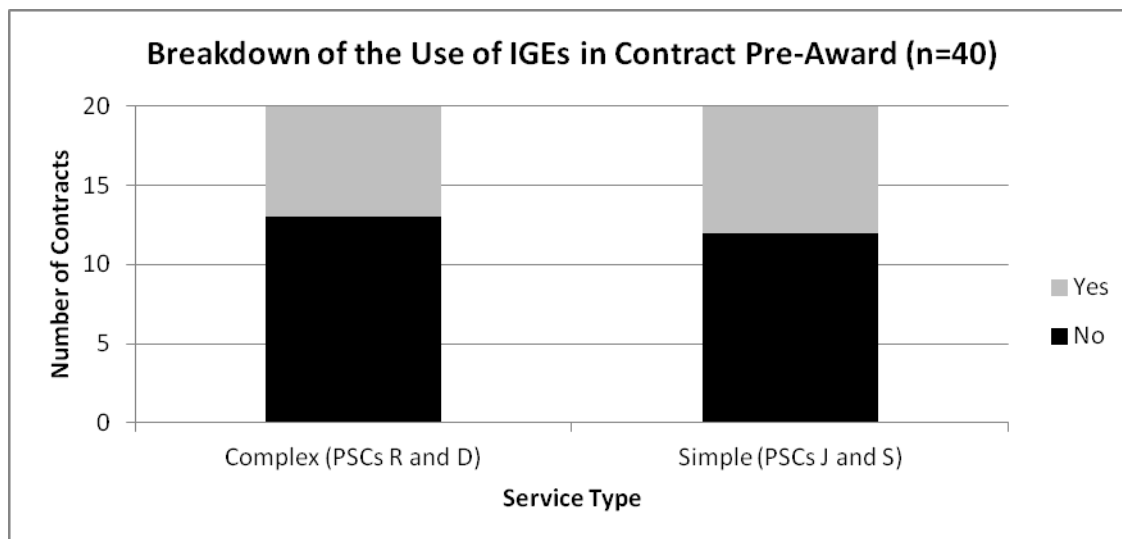
**Table 6. Summary of Chi-Squared Test for Service Type to Management Practices**

| <b>Factor 1</b> | <b>Factor 2<br/>(Management Practice)</b>                          | <b>Significance Level</b> | <b>Strength of Relationship</b> |
|-----------------|--|---------------------------|---------------------------------|
| Service Type    | Use of IGEs  | 74%                       | Weak                            |
| Service Type    | Number of Personnel<br>Generating/Change<br>Requirements           | 21%                       | Strong                          |
| Service Type    | Number of Personnel<br>Performing Contract<br>Management Oversight | 20%                       | Strong                          |
| Service Type    | Team Approach  | 100%                      | Weak                            |
| Service Type    | Number of Personnel<br>Assigned to Contract                        | 53%                       | Moderate                        |
| Service Type    | Contracting Lead   | 100%                      | Weak                            |
| Service Type    | Contract Award Time  | 34%                       | Moderate                        |
| Service Type    | Documentation<br>(Acquisition Plan)                                | 52%                       | Moderate                        |
| Service Type    | Documentation (SOW)  | 100%                      | Weak                            |
| Service Type    | Documentation (Pricing<br>Analysis)                                | 12%                       | Strong                          |
| Service Type    | Documentation (Quality<br>Assurance Plan)                          | 29%                       | Strong                          |
| Service Type    | Documentation (Closeout<br>Letter)                                 | 52%                       | Moderate                        |



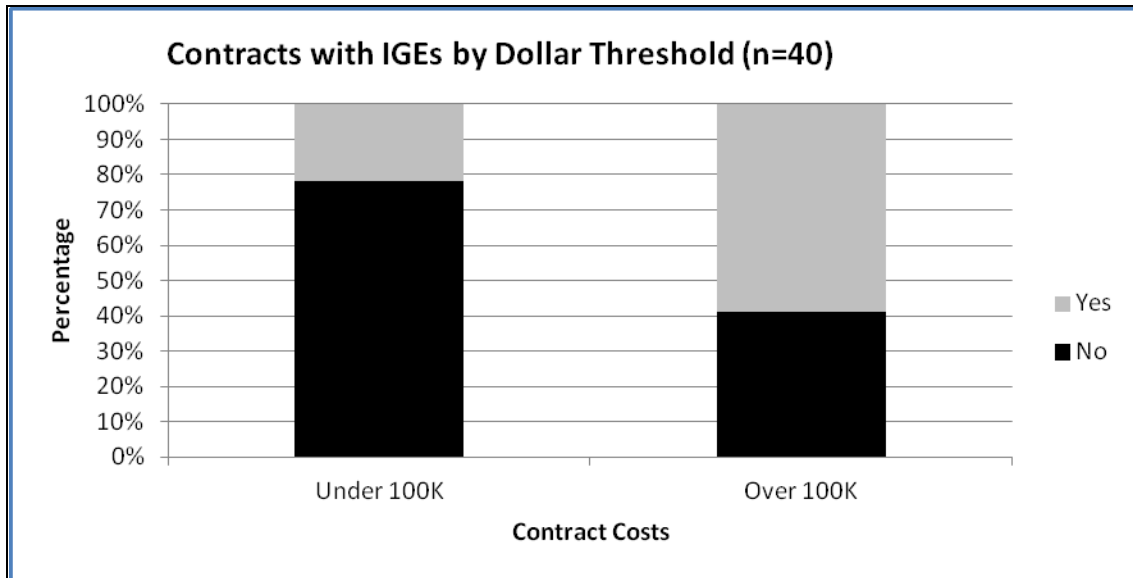
## 1. Independent Government Estimates

The data show that the use of IGEs was the same for complex- and simple-type service contracts, as shown in Figure 14. A chi-squared test of this data shows a weak relationship between service type and the management practice of using IGEs, with a significance level of 74% (see Table 6). Further analysis of this data shows that IGEs are driven by the dollar values of contracts, as seen in Figure 15. A chi-squared test of this data shows a strong relationship between the contract characteristic of contracts with a high dollar value and the management practice of using IGEs, with a significance level of 2%. Our analysis in the previous section shows contract dollar value being driven by service type, and therefore an indirect relationship is seen in which service type drives contract dollar value, which in turn affects the use of IGEs. Per Army Regulation 70-13, Section 3-3.a, an IGE is required for all contracts that exceed the simplified acquisition threshold of \$100,000 (DA, 2010, Chapter 3). However, Figure 15 shows that some contracts over \$100,000 did not have an IGE in the contract file. Thus, further research is required in this area to collect data to determine the cause for not having an IGE in the contract file and to determine what its impact is to acquisition performance.



**Figure 14.** Use of IGEs in Contracts by Service Type





**Figure 15.** Use of IGEs in Contracts by Dollar Value

## 2. Personnel Assigned to Requirements Generation and Changes

Personnel assigned to requirements generation and changes include key individuals who identify administrative and service requirements for a contract. There is a strong relationship between service type and the number of personnel assigned to generate and make changes to contract requirements. This is confirmed by the chi-squared test, which had a significance level of 21% (see Table 6). The average number of personnel generating or making changes to the requirements of a contract is higher in simple-type service contracts than complex-type service contracts. Thus, there may be other factors involved that affect the number of personnel involved in generating and making changes to contract requirements. For example, our discussion in Section B of this chapter shows that service type affects the number of modifications made on a contract. However, these changes may be driven by the customer or the contracting office, which would drive who would develop the initial or new requirements. Changes in contract requirements are implemented through modifications. Therefore, there is an indirect relationship between service type and management practice in which service type affects the number of modifications made on a contract, which in turn affects the personnel involved in managing these changes in a contract.





### **3. Personnel Assigned to Contract Management Oversight**

Contract management oversight includes personnel who are assigned responsibilities to monitor contractor performance for post-award functions. There is a strong relationship between service type and the number of personnel assigned to perform contract management oversight. This is confirmed by the chi-squared test, which had a significance level of 20% (see Table 6). Further analysis shows that complex-type service contracts have more personnel assigned to perform contract management oversight than simple-type service contracts. This relationship is further supported by our discussion in Section B of this chapter in which we showed that service type affects contract dollar value, where complex-type service contracts have a higher dollar value than simple-type service contracts. Therefore, there is an indirect relationship between service type and management practice in which service type affects the contract dollar value, which in turn affects the personnel involved in managing contract oversight.

### **4. Team Approach**

The team approach concept includes personnel from the following departments: contracting, resource management, legal, and requiring activity (DA, 2010, Chapter 1). The data we observed show that in 38 of the 40 contracts observed there was evidence of a team approach found in the contract files. Therefore, there is a weak relationship between service type and the management practice of using a team approach. The chi-squared test confirms this with a significance level of 100%, as seen in Table 6. The use of a team approach is required per Army Regulation 70-13, Section 1-5.e (DA, 2010, Chapter 1), for all acquisition. Thus, the observation is consistent with the Army Regulation in that 95% of the contracts used a team approach.

### **5. Personnel Assigned to Contract**

There is a moderate relationship between service type and the number of personnel assigned to a contract. This is confirmed by the chi-squared test, which had a significance level of 53% (see Table 6). However, the number of personnel assigned to a contract is driven more by the standard practices of the MICC centers we observed in this study. For example, one center followed a standard practice of assigning a KO and



contract specialist for pre-award activities, and a KO, contract specialist, and COR for post-award activities. Another center followed a standard practice of having a KO for pre-award, and a KO and customer representative for post-award. Therefore, service type does not affect the number of personnel assigned as much as it affects the standard practices of a contracting office.

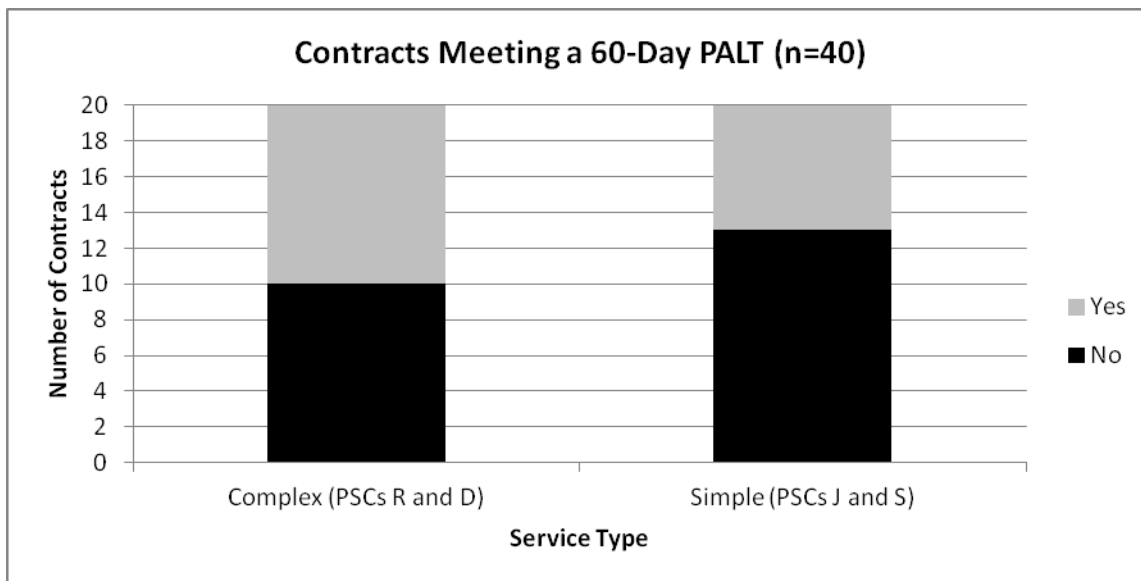
## **6. Contracting Lead**

The KO was always assigned as the contracting lead for all 40 contracts we observed at the two MICC centers. Therefore, there is a weak relationship between service type and the management practice of who leads the procurement of services. A chi-squared test confirms this with a significance level of 100%, as seen in Table 6. KOs are the only personnel who can obligate the government. Further research should focus on who leads the *little a* rather than on just the contracting portion of acquisition. For example, a project manager (PM) plays a lead role in ensuring that a project is completed from beginning to end for the entire project life cycle, whereas a KO is focused on ensuring the contract adheres to the FAR. Thus, the PM leads the acquisition process and coordinates among the various supporting organizations involved, including the contracting, legal, budgeting, finance, and supported unit.

## **7. Time to Award**

There is a moderate relationship between service type and contract award time. This is confirmed by the chi-squared test, which had a significance level of 34% (see Table 6). Assuming a procurement administrative lead-time (PALT) of 60 days, the data shows complex-type service contracts achieve the PALT metric more often than simple-type service contracts, as shown in Figure 16. However, there are other factors that affect the award time for contracts that are not service related. For example, award times may be driven by such factors as workload and availability of funds, which are not related to the service type.





**Figure 16.** Contracts Meeting PALT by Service Type

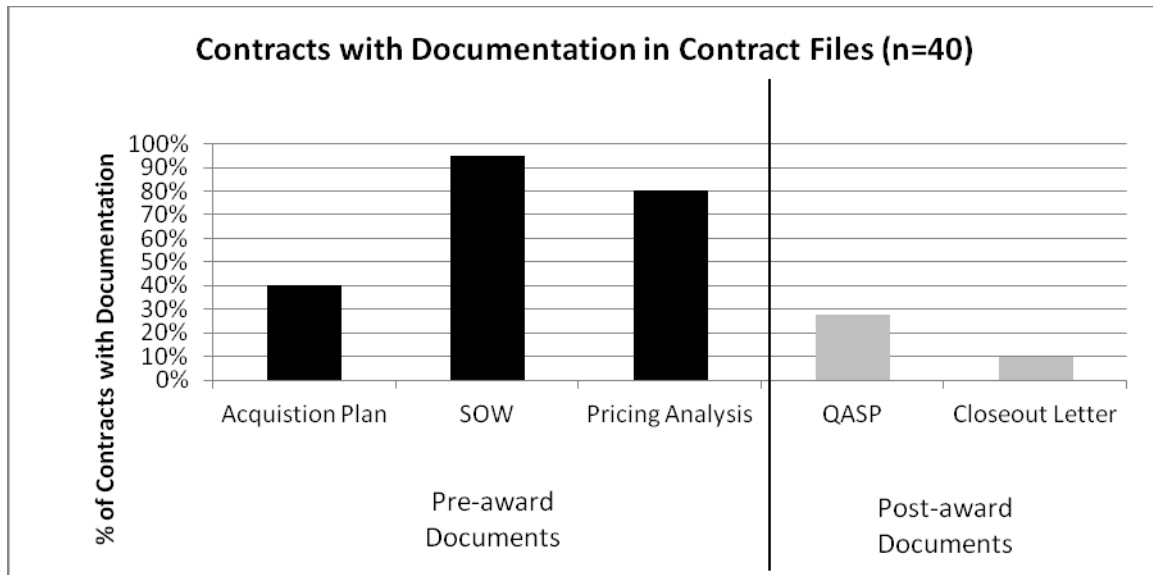
Another driving factor may be the number of personnel assigned to a contract. More personnel may increase productivity, but having to go through more management layers may increase the time to award a contract. Thus, there is a transaction cost of having multiple personnel manage a contract that may be effective but not efficient. Thus, further research is required to obtain more data and determine what other factors affect award time.

## 8. Documentation

Chi-squared tests of the relationship between service type and documentation practices show mixed levels of significance, as seen in Table 6. Further research is required to determine if service type affects documentation practices. Other factors are involved that affect contract file documentation. For example, 25% of the contracts observed did not have closeout letters because the work has not been completed and the contract term has not expired. Another example is the practice by contracting offices of not keeping quality assurance surveillance plans (QASPs) in their files; instead, these files are maintained by the CORs. However, there is evidence that shows documentation is driven by office function. For example, Figure 17 shows that a majority of the documentation on a contract is done for pre-award activities and less focus is put on post-



award activities. Thus, contracting offices must put emphasis on post-award documentation to ensure the requirements of *little a* are satisfied and not just the requirements for procuring the service.



**Figure 17.** Contract File Documentation

#### **D. CAPACITY AND MANAGEMENT PRACTICES**

The data we collected in our study show there is evidence that capacity does affect management practices. However, because we collected data from only two MICC centers, the sample size is so small that only descriptive statistics can be used to analyze the data. In order to confirm the findings of our analysis, further data is required from other MICC centers to ensure an adequate sample size for drawing inferences about the entire population. Although the data is limited, the information that we collected reflects that capacity does affect management practices. In the next section we present the observations from our study that support this conclusion. We also present a conceptual model of how capacity and workload affect management practices, which can be applied to future research.

##### **1. Capacity Data**

Table 7 shows the capacity-related data of the two MICC centers we observed. The capacity categories are as follows: the number of billets that are filled and



authorized, the level of certification that contracting personnel received through Defense Acquisition Workforce Improvement Act (DAWIA) training, and the years of experience that personnel have gained in the acquisition workforce. The two centers were both staffed at over 90% of authorized billets, had at least 99% of the personnel certified at or beyond DAWIA Level II, and had over 66% of personnel with more than three years of experience. Therefore, the centers have a strong capacity based on number of billets, certification, and experience.

Both centers have the same total dollar value workload, as shown in Table 8. However, the number of contracts awarded and their individual dollar values were different at each center. This difference can lead to different management practices. For FY2010, MICC Center A was awarded fewer contracts than MICC Center B, but its individual dollar value per contract was higher. Different management practices were used to fulfill contracting requirements. For example, MICC Center A assigned contracting personnel to contracts by customer, whereas MICC Center B assigned contracting personnel to contracts by work leveling. Although both centers have a strong capacity, the focus of work effort tends to be on pre-award functions rather than on post-award functions. For instance, both centers had strong documentation for SOWs (pre-award documents) and very little for QASPs (post-award documents), as discussed in Section C of this chapter. A possible reason for this is that when there is not enough capacity, the focus shifts to what an organization sees as the priority. For example, in a contracting office, the priority may be more on awarding a contract and less on contract administration and closeout. Therefore, capacity does affect management practices. However, further studies must be conducted to refine this finding.



**Table 7. Office Capacity of MICC Centers Observed**

| Capacity Category | Capacity Subcategories          | MICC Center A |            | MICC Center B |            |
|-------------------|---------------------------------|---------------|------------|---------------|------------|
|                   |                                 | Number        | Percentage | Number        | Percentage |
| Billets           | Warranted (Filled/Authorized)   | 19/19         | 100%       | 24/24         | 100%       |
|                   | Unwarranted (Filled/Authorized) | 18/21         | 86%        | 24/28         | 86%        |
| Certification     | DAWIA I                         | 1             | 2%         | 0             | 0%         |
|                   | DAWIA II                        | 27            | 66%        | 19            | 68%        |
|                   | DAWIA III                       | 13            | 32%        | 9             | 32%        |
| Experience        | < 1 year                        | 3             | 10%        | 2             | 4%         |
|                   | 1–2 years                       | 1             | 3%         | 1             | 2%         |
|                   | 2–3 years                       | 6             | 19%        | 10            | 21%        |
|                   | > 3 years                       | 21            | 68%        | 35            | 73%        |

**Table 8. FY2010 Service Contracts Awarded  
(MICC Headquarters, 2011)**

|   | MICC Center A | MICC Center B |
|---|---------------|---------------|
| Total dollar value of service contracts awarded (\$1,000) | 293,000       | 301,000       |
| Total number of service contracts awarded                 | 350           | 804           |
| Average dollar value/service contract (\$K/contract)      | 838           | 374           |

## 2. Conceptual Model

A conceptual model for relating capacity to management practices is illustrated in the following equations:

$$\text{Capacity} = f(\text{Billets}, \text{Certification}, \text{Experience}) \quad (2)$$

$$\text{Workload} = f(\text{Contract type}, \text{Contract dollar value}) \quad (3)$$

$$\text{Management Practices} = f(\text{Capacity}, \text{Workload}) \quad (4)$$

Capacity is driven by office staffing as well as by training and experience of personnel. The workload is driven by the type of contracts that need to be awarded and their dollar value. Finally, the management practices being used are affected by how the



capacity is used to accomplish the workload. To determine if these management practices are effective and efficient, future studies need to ask the question, how is success measured in acquisition? This is a complex question because every organization involved in the *little a* may have different perspectives on success. The stakeholders involved in acquisition include the PM, the KO, the comptroller, the lawyer, and the customer. All have different objectives, yet they all support each other in an integrated network to achieve a common goal. Therefore, the best management practices are the ones that most effectively and efficiently satisfy the requirements of an entire organization rather than those of only one specific functional area.

## **E. SUMMARY**

In this chapter, we presented the data we collected from our research and the findings from our analysis. We answered the three research questions proposed in this study. First, there is a moderate relationship between service type and contract characteristics. Second, there is a moderate relationship between service type and management practices. Third, there is evidence of a relationship between capacity and management practices, but additional data collection is required to further confirm this finding. These findings from our analyses further support the recurring themes we discussed in Chapter II. These recurring themes are the shortfalls in human capital and not having capable management processes, which both affect performance of service contracts. In Chapter VI, we go into more detail about these observations and findings.



## **VI. SUMMARY, CONCLUSION, AND AREAS FOR FURTHER RESEARCH**

### **A. SUMMARY**

This research project was conducted to help further previous studies in DoD services acquisition. The goal was to answer three questions related to acquisition in order to better understand the drivers of management practices. This leads to finding ways for improving performance in service contracting as services continue to increase in scope and dollar amount for the DoD. The studies we conducted at the two Army MICC centers serve as templates for follow-on studies to be conducted at the 39 remaining MICC offices.

In Chapter I we provided an overview of our study and background information that established the need for this research. In Chapter II, we presented previous research in services acquisition management and the theories that we applied in this study. In Chapter III, we introduced the Gansler Report and the recent reorganization of Army contracting units, including the establishment of the MICC. In Chapter IV, we laid out the research methodology we used for collecting and analyzing our data. We presented the results and analysis of the study in Chapter V and summarize them in the next section.

### **B. CONCLUSION**

#### **1. Research Findings**

This study answered the following research questions:

- 1) Do the contract characteristics differ for different types of services?
- 2) Do the types of services being acquired affect the management practices being used?
- 3) Does the capacity for carrying out acquisition-related work affect the management practices being used?

In response to Question 1, we found that service type does affect contract characteristics. Complex-type service contracts had more sole-source solicitations than





simple-type service contracts, leading to more use of methods other than LPTA as an award basis. Complex-type service contracts also had higher dollar values and required more modifications than simple-type service contracts. However, we also observed in the study that both complex- and simple-type service contracts had the same contract characteristics, as well as that all contracts were awarded FFP and that none had any incentive or award fees.

For Question 2, we found that service type indirectly affects the management practices being used. This indirect relationship is seen with the following management practices: the use of independent government estimates (IGEs), identification and changes to requirements, and personnel assigned to perform contract management oversight. We observed management practices that were consistent across the MICC centers in our study, regardless of service type, including the use of a team approach, personnel assigned to manage the contracts, assigning the KO as the contracting lead, time frames for the award of contracts, and focus on pre-award activities for contract documentation.

Finally, with regard to Question 3 we found that there is evidence of capacity affecting management practices. The two centers we observed had similar capacities but different types of workloads. This led to differences in management practices, but there were also practices that were standard across both the centers. Therefore, capacity does affect the management practices being used at the different centers. However, the data we collected from only two MICC centers is limited. In order to confirm the findings of our analysis, further data is required from other MICC centers to ensure an adequate enough sample size to draw inferences about the entire population.

Although each center had different management practices, there were standard practices that both centers followed for awarding service contracts. For instance, both centers solicited contracts through full and open competition as much as possible and awarded contracts by FFP with no award or incentive fees. Also, both centers utilized a team approach and maintained consistency in assigning personnel for management of contracts. These were the common contracting practices that we observed across the two



Army MICC centers. However, consideration has to be given to the uniqueness of each center, which affects some of the different management practices being used at each.

## **2. Recommendations**

The focus of this research was to identify drivers of management practices in order to help improve performance in services acquisition. There are no perfect systems. Therefore, there should always be a focus on continuous improvement. The two recommendations we make in this section are based on the data we observed and analyzed in this research.

Our first recommendation, focusing on the *little a*, is for acquisition professionals to continue to emphasize a holistic approach for meeting the needs of customers. The mission of a contracting office is not to award contracts, but to support the operational units through contracting. There are various players involved in the acquisition process, and contracting is just one part of the entire system. However, contracting is nonetheless a critical element to the success of the DoD mission.

Our second recommendation, again focusing on the *little a*, is for managers to allow flexibility in contracting practices. Contracting offices should maintain standard processes, but not be limited in utilizing other contracting tools that are available and that can provide better performance than current practices. Service requirements are dynamic and, as a result, what was a best practice yesterday may not be the best practice of today or of the future. Developing the workforce will not increase the number of personnel, but it will increase their knowledge of the contracting tools available to them. This, in turn, improves performance, which supports the concept of “do more without more” (USD[AT&L], 2010, p. 4 ).

Our third recommendation, still focusing on the *little a*, is for contracting offices to continue to emphasize management of contracts through their entire life cycle. An acquisition plan helps identify all the requirements that need to be met, which can prevent costly changes to contracts later in the process. Also, post-award functions are a critical part in the contracting process and cannot be overlooked. A requirement is not met after a contract is awarded because there is still the administration of the contract that must be



carried out, which ensures that both the contractor and the government are meeting the requirements established in the contract.

## **C. AREAS FOR FURTHER RESEARCH**

This section has two parts. The first part is our recommendations for furthering the existing study by making modifications to the data collection form. In the second part we make suggestions for research into different areas of acquisition that we discovered during this research project but that are not within the scope of this study.

### **1. Expand Study to Other MICC Units and Military Departments**

One modification that should be made to the data collection is to increase the sample size. The sample size we collected in this research is small compared to the total number of contracts awarded at the two centers. In Table 8, the two centers combined awarded a total of 1,154 service contracts for FY2010, with 564 contracts combined falling into the PSC categories of R, D, J, and S (MICC Headquarters, 2011). We observed 40 contracts total in this study, which only accounted for 7% of the 564 contracts described above. This is an even smaller sample size considering that the contracts observed were across several fiscal years and from only two of the 41 MICC contracting offices. Thus, to make stronger inferences about the data, there needs to be an increase in the sample size for the PSCs observed in this study, and other MICC contracting offices need to be studied. Based on the data in Figure 9, we recommend the observation of contracts at the five remaining regional MICC contracting centers and a look into the other 34 DOCs. In this study we observed only 20 contracts per center. Applying the learning curve theory, future researchers might consider observing 30 contracts per center, assuming an 80% learning curve and allowing two days to collect data at each center (16 hours at each center).

A second modification that should be made to the data collection form is to continue to refine the questions on the form in order to limit the possibility for misinterpretation. For example, team approach in this study was assumed to have occurred if there was evidence of assigned roles documented in the contract files. Army Regulation 70-13 states that “the team approach includes, at a minimum, contracting,



management, legal, and requiring activity personnel” (DA, 2010, Chapter 1, Section 1-5.e). Thus, this provides for a clearer definition of team approach that should be used in future studies. Another example of how to refine the research questions would be to clearly differentiate the roles and responsibilities in the acquisition process. This distinction is critical when asking who leads the acquisition of a requirement because one is focused on the entire process (the PM), whereas another is focused on the contracting (the KO).

Finally, the model we used in Section D of Chapter V should be further refined. We presented the variables in conceptual form. Future studies should define the drivers of these variables. For instance, capacity is defined by billets, training, and experience. However, questions should also be asked of what the baselines are for these drivers in order to determine if their capacity is adequate enough to carry out the workload.

Extending this research to other military departments will allow an opportunity to compare management practices. This will help identify best practices that can be applied across the DoD. With the focus of the acquisition community on “doing more without more” (USD[AT&L], 2010, p. 4), reform efforts in acquisition should include scientific management (efficiency), war on waste (economy), watchful eye (fairness), and liberation management (entrepreneurialism). These efforts can be applied individually or concurrently to help improve service acquisition management practices in the DoD.

## **2. Other Acquisition-Related Studies**

One of the findings in the literature review is that the *Big A* is a disjointed system, with various units that have competing interests. Similarly, the *little a* is also disjointed with units having different objectives. Therefore, each organization may define success differently. We propose a research topic analyzing how each of these individual units defines success in order to determine how to align these goals toward a common purpose.

Another research topic we propose is to analyze transaction costs. Contract costs may be reported with only what is paid to a contractor. However, there are indirect costs involved that must be accounted for to help ensure that the contract gets solicited, awarded, and administered properly. For instance, there are costs associated with



implementing a contract modification, conducting a pricing analysis, and executing quality assurance on a contract. These are not costs paid to a contractor, but they are still costs to the government that must be paid through time and money resources for government personnel. Therefore, a cost-benefit analysis must be done on these indirect costs to determine if there are potential savings from reducing these costs, with consideration of what risks are involved.

A final topic we propose is to continue looking for opportunities to “do more without more,” as mentioned by Secretary Carter (USD[AT&L], 2010, p. 4). If there is no increase in the capacity to execute the work, then there must be better processes to increase productivity. Some examples in the scope of this research topic would be to analyze contractor manpower data reports in order to determine the cost drivers, to compare costs between sourcing service requirements through government personnel versus contractors, and to conduct a cost-benefit analysis of office organization by customer versus service commodity.



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## APPENDIX A. SAMPLE DATA COLLECTION FORM

### Army Mission and Installation Contracting Command Services Acquisition Data Collection Form (Part I)

**1. Office**

*MICC Center Fort Knox: CCMI-RCK*

*MICC Center Fort Sam Houston: CCMI-RCS*

**2. Contract number and title**

\_\_\_\_\_

**3. What type of service is this contract (mark all that apply)?**

*Professional, Administrative, and Management Support (R)*

*Data Processing and Telecommunications (D)*

*Maintenance and Repair of Equipment (J)*

*Utilities and Housekeeping (S)*

**4. What approach was the contract solicited through?**

*Competitively Bid (Full and Open)*

*Sole Source*

*Other (please specify):* \_\_\_\_\_

**5. What was the type of contract awarded for this service?**

*Fixed-price*

*Cost-reimbursable*

*Other (please specify):* \_\_\_\_\_

**6. What incentive/award type does this contract include?**

*Incentive Fee*

*Award Fee*

*Award Term*

*Other (please specify):* \_\_\_\_\_

**7. What is the current contract value (breakdown by base award and individual modifications)?**

\_\_\_\_\_

**8. How many modifications were there, and what were the reasons for each one?**

\_\_\_\_\_

**9. Was an independent government estimate (IGE) included, and if so, what was the value?**



IGE – Yes/No  
Value\_\_\_\_\_

**10. What was the award basis for this contract?**

*Lowest-Price Technically-Acceptable (LPTA)*

*Best-Value (e.g. use of trade-off analysis)*

*Other (please specify):\_\_\_\_\_*

**11. Was a Project Team Approach used in the acquisition of this service contract?**

*Yes*

*No*

**12. How many people in the following positions are assigned to this service contract?**

*Contracting Officer (PCO, ACO, CO)\_\_\_\_\_*

*Contract Specialist\_\_\_\_\_*

*Project Manager\_\_\_\_\_*

*Contracting Officer Representative (COR)\_\_\_\_\_*

*Quality-assurance Evaluator (QAE)\_\_\_\_\_*

*Customer (unit which requested requirement)\_\_\_\_\_*

*Other (please explain)\_\_\_\_\_*

**13. Who leads the acquisition of this service contract?**

*Contracting Officer (PCO, ACO, CO)\_\_\_\_\_*

*Contract Specialist\_\_\_\_\_*

*Project Manager\_\_\_\_\_*

*Contracting Officer Representative (COR)\_\_\_\_\_*

*Quality-assurance Evaluator (QAE)\_\_\_\_\_*

*Customer (unit which requested requirement)\_\_\_\_\_*

*Other (please explain)\_\_\_\_\_*

**14. Who generates and decides changes to the service requirements?**

*Contracting Officer (PCO, ACO, CO)\_\_\_\_\_*

*Contract Specialist\_\_\_\_\_*

*Project Manager\_\_\_\_\_*

*Contracting Officer Representative (COR)\_\_\_\_\_*

*Quality-assurance Evaluator (QAE)\_\_\_\_\_*

*Customer (unit which requested requirement)\_\_\_\_\_*

*Other (please explain)\_\_\_\_\_*

**15. Who performs the surveillance of this service contract?**

*Contracting Officer (PCO, ACO, CO)\_\_\_\_\_*

*Contract Specialist\_\_\_\_\_*

*Project Manager\_\_\_\_\_*

*Contracting Officer Representative (COR)\_\_\_\_\_*

*Quality-assurance Evaluator (QAE)\_\_\_\_\_*



*Customer (unit which requested requirement)\_\_\_\_\_*  
*Other (please explain)\_\_\_\_\_*

**16. What were the dates (mm/dd/yyyy) for the following events?**

Purchase Request\_\_\_\_\_

Solicitation \_\_\_\_\_

Award\_\_\_\_\_

Completion\_\_\_\_\_

Closeout\_\_\_\_\_

**17. Were the following items documented in the contract file?**

*Acquisition plan – Yes/No*

*Statement of work (SOW) / Performance Work Statement (PWS) – Yes/No*

*Pricing analysis – Yes/No*

*Price negotiation memorandum (PNM) – Yes/No*

*Quality Assurance Plan (QASP) – Yes/No*

*Closeout letter – Yes/No*

**18. Other comments not covered by questions above?**



# Army Mission and Installation Contracting Command Services Acquisition Data Collection Form (Part II)

When answering below questions, only consider the service contracts element of the command.

## 1. Office

*MICC Center Fort Knox: CCMI-RCK*

*MICC Center Fort Sam Houston: CCMI-RCS*

## 2. How many service contracts were awarded for FY10 in the following services?

*Professional, Administrative, and Management Support (R) \_\_\_\_\_*

*Data Processing and Telecommunications (D) \_\_\_\_\_*

*Maintenance and Repair of Equipment (J) \_\_\_\_\_*

*Utilities and Housekeeping (S) \_\_\_\_\_*

## 3. What was the total dollar value awarded in FY10 for the following services?

*Professional, Administrative, and Management Support (R) \_\_\_\_\_*

*Data Processing and Telecommunications (D) \_\_\_\_\_*

*Maintenance and Repair of Equipment (J) \_\_\_\_\_*

*Utilities and Housekeeping (S) \_\_\_\_\_*

## 4. What was the annual budget for the government service contracts staff in FY10?

\_\_\_\_\_

## 5. How many billets are authorized for the following positions?

*Contracting Officers/Contract Specialists (Warranted) \_\_\_\_\_*

*Contracting Officers/Contract Specialists (Unwarranted) \_\_\_\_\_*

*Project managers \_\_\_\_\_*

*QAE \_\_\_\_\_*

## 6. How many authorized billets are filled for the following positions?

*Contracting Officers/Contract Specialists (Warranted) \_\_\_\_\_*

*Contracting Officers/Contract Specialists (Unwarranted) \_\_\_\_\_*

*Project managers \_\_\_\_\_*

*QAE \_\_\_\_\_*

## 7. What are the number of contracting personnel Defense Acquisition Workforce Improvement Act (DAWIA) certified in the following levels?

*DAWIA Level I (authorized\_\_\_\_, filled\_\_\_\_, trained\_\_\_\_)*

*DAWIA Level II (authorized\_\_\_\_, filled\_\_\_\_, trained\_\_\_\_)*

*DAWIA Level III (authorized\_\_\_\_, filled\_\_\_\_, trained\_\_\_\_)*



**8. How many Contracting Officer Representatives (COR) / Quality Assurance Evaluators (QAE) are COR/QAE certified?**

COR\_\_\_\_\_

QAE\_\_\_\_\_

**9. How many contracting officers / contract specialists have the following time of experience?**

*0-6 months*\_\_\_\_\_

*6-12 months*\_\_\_\_\_

*12-24 months*

*24-36 months*

*Beyond 36 months*

**10. How many project managers have the following time of experience?**

*0-6 months*\_\_\_\_\_

*6-12 months*\_\_\_\_\_

*12-24 months*

*24-36 months*

*Beyond 36 months*

**11. How many CORs have the following time of experience?**

*0-6 months*\_\_\_\_\_

*6-12 months*\_\_\_\_\_

*12-24 months*

*24-36 months*

*Beyond 36 months*

**12. How many QAEs have the following time of experience?**

*0-6 months*\_\_\_\_\_

*6-12 months*\_\_\_\_\_

*12-24 months*

*24-36 months*

*Beyond 36 months*

**13. What is the average number of service contracts that a person in each of the following positions manages?**

*Contracting officers*\_\_\_\_\_

*Contract specialists (1102)*\_\_\_\_\_

*Project managers (1101)*\_\_\_\_\_

*QAE*\_\_\_\_\_

**14. We appreciate any comments or feedback you can provide on the topic of services acquisition.**





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## APPENDIX B. CHI-SQUARED CALCULATIONS

### 1. Service Type and Contract Characteristics

**Table B1.1 Chi-squared Results for Service Type and Solicitation Type**

| Contingency Table           |                              |                    |               |
|-----------------------------|------------------------------|--------------------|---------------|
|                             | <i>Solicitation Type</i>     |                    |               |
| <i>Service Type</i>         | <i>Full/Open Competition</i> | <i>Sole-Source</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 13                           | 7                  | 20            |
| <i>Simple (J and S)</i>     | 15                           | 5                  | 20            |
| TOTAL                       | 28                           | 12                 | 40            |
| <b>chi-squared Stat</b>     |                              |                    | <b>0.4762</b> |
| <b>df</b>                   |                              |                    | <b>1</b>      |
| <b>p-value</b>              |                              |                    | <b>0.4902</b> |
| <b>chi-squared Critical</b> |                              |                    | <b>2.7055</b> |

**Table B1.2 Chi-squared Results for Service Type and Award Basis**

| Contingency Table           |  |              |               |
|-----------------------------|--|--------------|---------------|
|                             | <i>Award Basis</i>                             |              |               |
| <i>Service Type</i>         | <i>Lowest-Price<br/>Technically-Acceptable</i> | <i>Other</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 13   | 7            | 20            |
| <i>Simple (J and S)</i>     | 15   | 5            | 20            |
| TOTAL                       | 28   | 12           | 40            |
| <b>chi-squared Stat</b>     |  |              | <b>0.4762</b> |
| <b>df</b>                   |  |              | <b>1</b>      |
| <b>p-value</b>              |  |              | <b>0.4902</b> |
| <b>chi-squared Critical</b> |  |              | <b>3.8415</b> |

**Table B1.3 Chi-squared Results for Service Type and Contract Cost**

| Contingency Table           |                                   |                |               |
|-----------------------------|-----------------------------------|----------------|---------------|
|                             | <i>Contract Cost (Base-Value)</i> |                |               |
| <i>Service Type</i>         | <i>&lt;\$100K</i>                 | <i>≥\$100K</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 10                                | 10             | 20            |
| <i>Simple (J and S)</i>     | 13                                | 7              | 20            |
| TOTAL                       | 23                                | 17             | 40            |
| <b>chi-squared Stat</b>     |                                   |                | <b>0.9207</b> |
| <b>df</b>                   |                                   |                | <b>1</b>      |
| <b>p-value</b>              |                                   |                | <b>0.3373</b> |
| <b>chi-squared Critical</b> |                                   |                | <b>3.8415</b> |



**Table B1.4 Chi-squared Results for Service Type and Modifications**

| Contingency Table           |                      |           |               |
|-----------------------------|----------------------|-----------|---------------|
|                             | <i>Modifications</i> |           |               |
| <i>Service Type</i>         | <i>Yes</i>           | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 9                    | 11        | 20            |
| <i>Simple (J and S)</i>     | 9                    | 11        | 20            |
| TOTAL                       | 18                   | 22        | 40            |
| <b>chi-squared Stat</b>     |                      |           | <b>0</b>      |
| <b>df</b>                   |                      |           | <b>1</b>      |
| <b>p-value</b>              |                      |           | <b>1</b>      |
| <b>chi-squared Critical</b> |                      |           | <b>3.8415</b> |

**Table B1.5 Chi-squared Results for Service Type and Award Cost Structure**

| Contingency Table           |                             |                          |          |
|-----------------------------|-----------------------------|--------------------------|----------|
|                             | <i>Award Cost Structure</i> |                          |          |
| <i>Service Type</i>         | <i>Firm-Fixed Price</i>     | <i>Cost-Reimbursable</i> | TOTAL    |
| <i>Complex (R and D)</i>    | 20                          | 0                        | 20       |
| <i>Simple (J and S)</i>     | 20                          | 0                        | 20       |
| TOTAL                       | 40                          | 0                        | 40       |
| <b>chi-squared Stat</b>     |                             |                          | <b>0</b> |
| <b>df</b>                   |                             |                          | <b>0</b> |
| <b>p-value</b>              |                             |                          | <b>1</b> |
| <b>chi-squared Critical</b> |                             |                          | <b>1</b> |

**Table B1.6 Chi-squared Results for Service Type and Incentive/Award Fees**

| Contingency Table           |                             |           |          |
|-----------------------------|-----------------------------|-----------|----------|
|                             | <i>Incentive/Award Fees</i> |           |          |
| <i>Service Type</i>         | <i>Yes</i>                  | <i>No</i> | TOTAL    |
| <i>Complex (R and D)</i>    | 13                          | 7         | 20       |
| <i>Simple (J and S)</i>     | 15                          | 5         | 20       |
| TOTAL                       | 28                          | 12        | 40       |
| <b>chi-squared Stat</b>     |                             |           | <b>0</b> |
| <b>df</b>                   |                             |           | <b>0</b> |
| <b>p-value</b>              |                             |           | <b>1</b> |
| <b>chi-squared Critical</b> |                             |           | <b>1</b> |



## 2. Service Type and Management Practices

**Table B2.1 Chi-squared Results for Service Type and Use of Independent Government Estimates**

| Contingency Table        |   |           |               |
|--------------------------|---|-----------|---------------|
|                          | <i>Use of Independent Government Estimate</i> |           |               |
| <i>Service Type</i>      | <i>Yes</i>                                    | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i> | 7   | 13        | 20            |
| <i>Simple (J and S)</i>  | 8   | 12        | 20            |
| TOTAL                    | 15  | 25        | 40            |
| chi-squared Stat         |   |           | <b>0.1067</b> |
| df                       |   |           | <b>1</b>      |
| p-value                  |   |           | <b>0.744</b>  |
| chi-squared Critical     |   |           | <b>3.8415</b> |

**Table B2.2 Chi-squared Results for Service Type and Number of Personnel Generating/Changing Requirements**

| Contingency Table        |   |          |          |               |
|--------------------------|---|----------|----------|---------------|
|                          | <i>Number of Personnel<br/>Generating/Changing Requirements</i> |          |          |               |
| <i>Service Type</i>      | <i>1</i>  | <i>2</i> | <i>3</i> | TOTAL         |
| <i>Complex (R and D)</i> | 8   | 9        | 3        | 20            |
| <i>Simple (J and S)</i>  | 6   | 6        | 8        | 20            |
| TOTAL                    | 14  | 15       | 11       | 40            |
| chi-squared Stat         |   |          |          | <b>3.1584</b> |
| df                       |   |          |          | <b>2</b>      |
| p-value                  |   |          |          | <b>0.2061</b> |
| chi-squared Critical     |   |          |          | <b>5.9915</b> |

**Table B2.3 Chi-squared Results for Service Type and Number of Personnel Performing Contract Management Oversight**

| Contingency Table        |   |          |          |               |
|--------------------------|---|----------|----------|---------------|
|                          | <i>Number of Personnel<br/>Performing Contract Management Oversight</i> |          |          |               |
| <i>Service Type</i>      | <i>1</i>  | <i>2</i> | <i>3</i> | TOTAL         |
| <i>Complex (R and D)</i> | 0   | 10       | 10       | 20            |
| <i>Simple (J and S)</i>  | 3   | 9        | 8        | 20            |
| TOTAL                    | 3   | 19       | 18       | 40            |
| chi-squared Stat         |   |          |          | <b>3.2749</b> |
| df                       |   |          |          | <b>2</b>      |
| p-value                  |   |          |          | <b>0.1945</b> |
| chi-squared Critical     |   |          |          | <b>5.9915</b> |



**Table B2.4 Chi-squared Results for Service Type and Team Approach**

| Contingency Table           |                      |           |               |
|-----------------------------|----------------------|-----------|---------------|
|                             | <i>Team Approach</i> |           |               |
| <i>Service Type</i>         | <i>Yes</i>           | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 19                   | 1         | 20            |
| <i>Simple (J and S)</i>     | 19                   | 1         | 20            |
| TOTAL                       | 38                   | 2         | 40            |
| <b>chi-squared Stat</b>     |                      |           | <b>0</b>      |
| <b>df</b>                   |                      |           | <b>1</b>      |
| <b>p-value</b>              |                      |           | <b>1</b>      |
| <b>chi-squared Critical</b> |                      |           | <b>3.8415</b> |

**Table B2.5 Chi-squared Results for Service Type and Number of Personnel Assigned**

| Contingency Table           |                                     |    |    |               |
|-----------------------------|-------------------------------------|----|----|---------------|
|                             | <i>Number of Personnel Assigned</i> |    |    |               |
| <i>Service Type</i>         | 2                                   | 3  | 5  | TOTAL         |
| <i>Complex (R and D)</i>    | 0                                   | 10 | 10 | 20            |
| <i>Simple (J and S)</i>     | 1                                   | 11 | 8  | 20            |
| TOTAL                       | 1                                   | 21 | 18 | 40            |
| <b>chi-squared Stat</b>     |                                     |    |    | <b>1.2698</b> |
| <b>df</b>                   |                                     |    |    | <b>2</b>      |
| <b>p-value</b>              |                                     |    |    | <b>0.53</b>   |
| <b>chi-squared Critical</b> |                                     |    |    | <b>5.9915</b> |

**Table B2.6 Chi-squared Results for Service Type and Contracting Lead**

| Contingency Table           |                         |              |          |
|-----------------------------|-------------------------|--------------|----------|
|                             | <i>Contracting Lead</i> |              |          |
| <i>Service Type</i>         | <i>KO</i>               | <i>Other</i> | TOTAL    |
| <i>Complex (R and D)</i>    | 20                      | 0            | 20       |
| <i>Simple (J and S)</i>     | 20                      | 0            | 20       |
| TOTAL                       | 40                      | 0            | 40       |
| <b>chi-squared Stat</b>     |                         |              | <b>0</b> |
| <b>df</b>                   |                         |              | <b>0</b> |
| <b>p-value</b>              |                         |              | <b>1</b> |
| <b>chi-squared Critical</b> |                         |              | <b>1</b> |



**Table B2.7 Chi-squared Results for Service Type and Meeting Procurement Administrative Lead Time**

| Contingency Table           |  |           |               |
|-----------------------------|--|-----------|---------------|
|                             | <i>Meet Procurement Administrative Lead Time</i> |           |               |
| <i>Service Type</i>         | <i>Yes</i>                                       | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 10   | 10        | 20            |
| <i>Simple (J and S)</i>     | 7  | 13        | 20            |
| TOTAL                       | 17   | 23        | 40            |
| <b>chi-squared Stat</b>     |  |           | <b>0.9207</b> |
| <b>df</b>                   |  |           | <b>1</b>      |
| <b>p-value</b>              |  |           | <b>0.3373</b> |
| <b>chi-squared Critical</b> |  |           | <b>3.8415</b> |

**Table B2.8 Chi-squared Results for Service Type and Documentation (Acquisition Plan)**

| Contingency Table           |   |           |               |
|-----------------------------|---|-----------|---------------|
|                             | <i>Documentation (Acquisition Plan)</i> |           |               |
| <i>Service Type</i>         | <i>Yes</i>                              | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 7                                       | 13        | 20            |
| <i>Simple (J and S)</i>     | 9                                       | 11        | 20            |
| TOTAL                       | 16                                      | 24        | 40            |
| <b>chi-squared Stat</b>     |   |           | <b>0.4167</b> |
| <b>df</b>                   |   |           | <b>1</b>      |
| <b>p-value</b>              |   |           | <b>0.5186</b> |
| <b>chi-squared Critical</b> |   |           | <b>3.8415</b> |

**Table B2.9 Chi-squared Results for Service Type and Documentation (Statement of Work/Performance Work Statement)**

| Contingency Table           |   |           |               |
|-----------------------------|---|-----------|---------------|
|                             | <i>Documentation (Statement of Work/Performance Work Statement)</i> |           |               |
| <i>Service Type</i>         | <i>Yes</i>  | <i>No</i> | TOTAL         |
| <i>Complex (R and D)</i>    | 19  | 1         | 20            |
| <i>Simple (J and S)</i>     | 19  | 1         | 20            |
| TOTAL                       | 38  | 2         | 40            |
| <b>chi-squared Stat</b>     |   |           | <b>0</b>      |
| <b>df</b>                   |   |           | <b>1</b>      |
| <b>p-value</b>              |   |           | <b>1</b>      |
| <b>chi-squared Critical</b> |   |           | <b>3.8415</b> |



**Table B2.10 Chi-squared Results for Service Type and Documentation (Pricing Analysis)**

| Contingency Table           |   |           |        |
|-----------------------------|---|-----------|--------|
|                             | <i>Documentation (Pricing Analysis)</i> |           |        |
| <i>Service Type</i>         | <i>Yes</i>                              | <i>No</i> | TOTAL  |
| <i>Complex (R and D)</i>    | 14                                      | 6         | 20     |
| <i>Simple (J and S)</i>     | 18                                      | 2         | 20     |
| TOTAL                       | 32                                      | 8         | 40     |
| <b>chi-squared Stat</b>     |   |           | 2.5    |
| <b>df</b>                   |   |           | 1      |
| <b>p-value</b>              |   |           | 0.1138 |
| <b>chi-squared Critical</b> |   |           | 3.8415 |

**Table B2.11 Chi-squared Results for Service Type and Documentation (Quality Assurance Plan)**

| Contingency Table           |   |           |        |
|-----------------------------|---|-----------|--------|
|                             | <i>Documentation (Quality Assurance Plan)</i> |           |        |
| <i>Service Type</i>         | <i>Yes</i>                                    | <i>No</i> | TOTAL  |
| <i>Complex (R and D)</i>    | 7   | 13        | 20     |
| <i>Simple (J and S)</i>     | 4   | 16        | 20     |
| TOTAL                       | 11  | 29        | 40     |
| <b>chi-squared Stat</b>     |   |           | 1.1285 |
| <b>df</b>                   |   |           | 1      |
| <b>p-value</b>              |   |           | 0.2881 |
| <b>chi-squared Critical</b> |   |           | 3.8415 |

**Table B2.12 Chi-squared Results for Service Type and Documentation (Closeout Letter)**

| Contingency Table           |  |           |        |
|-----------------------------|--|-----------|--------|
|                             | <i>Documentation (Closeout Letter)</i> |           |        |
| <i>Service Type</i>         | <i>Yes</i>                             | <i>No</i> | TOTAL  |
| <i>Complex (R and D)</i>    | 2                                      | 17        | 20     |
| <i>Simple (J and S)</i>     | 1                                      | 19        | 20     |
| TOTAL                       | 3                                      | 36        | 40     |
| <b>chi-squared Stat</b>     |  |           | 0.4191 |
| <b>df</b>                   |  |           | 1      |
| <b>p-value</b>              |  |           | 0.5174 |
| <b>chi-squared Critical</b> |  |           | 3.8415 |



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## **Acquisition Management**

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-U.S. Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

## **Contract Management**

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21<sup>st</sup>-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting





## **Financial Management**

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

## **Human Resources**

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-term Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

## **Logistics Management**

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)



- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

### **Program Management**

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
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